Certificate
of Conformity

TÜVRheinland®
MEEI

according to
Low Voltage Directive 2006/95/EC

Certificate No.: M1 2992114 01

Report No.: 28207138 001

Certificate Holder:
VENTILATION SYSTEMS JSC
1, Mikhaila Kotzubinskiego str.
UA-01030 Kiev
Ukraine

Manufacturer:
VENTILATION SYSTEMS JSC
1, Mikhaila Kotzubinskiego str.
UA-01030 Kiev
Ukraine

Product:
Fans

Identification:
VENTS xxx VKOy w z turbo Trademark:VENTS
'xxx':the diameter of the duct[mm]:100; 125; 150
'VKO': indication of the series
'y' can be: blank, k: modified enclosure shape
'w' can be: blank: (220-240 V~); or 12 V~
'z': can be: blank, L : long lasting bearing
turbo: can be: blank, turbo (motor with increased power is installed)
turbo: motor with increased power (can be blank)
Ratings:AC 220-240V~, Class II, 12V, Class III, IP X4

Name and adress of the factory:
Ventilation Systems JSC
36, 40-Richchya Zhovtnya Str.
Boyarka 08150, Kiev Region, Ukraine

Tested according to:
EN 60335-2-80:2003+A1
EN 60335-1:2002+A1+A11+A12+A2+A13
EN 50366:2003+A1

This certificate refers to the above mentioned product. This is to certify that the test sample is in conformity with the requirements of Annex I of the Directive. The holder of the certificate is entitled to use this certificate for the declaration of conformity according to Annex III of the Directive. This certificate does not imply assessment of the production of the product and does not permit to use of a TÜV Rheinland or MEEI mark. The certificate is valid up to 3 years provided that the test specifications and construction of the product remain unchanged during this period.

Budapest, 2009.02.09

Ferencne Schmidt

TEST REPORT
IEC 60335-2-80
Safety of household and similar electrical appliances
Part 2 : Particular requirements for fans

Report Reference No. ..... :	28207138 001
Compiled by (+ signature)..... :	Ferenc Horvát
Approved by (+ signature)..... :	Zoltán Zsákai
Date of issue ..... :	05.02.2009.
Number of pages ..... :	67 pages of test report
CB Testing Laboratory ..... :	Hungarian Institute for Testing and Certification of Electrical Equipment Ltd. (MEEI Kft.) Member of the TÜV Rheinland group
Address..... :	H-1132 Budapest, Váci út 48. a-b. Hungary
Testing location/procedure..... :	CBTL [X] SMT [ ] TMP [ ]
Address..... :	As above
Applicant's name ..... :	Ventilation Systems JSC
Address..... :	1, Mikhaila Kotzubinskiego St., Kiev, UA-01030, Ukraine
Test specification:	
Standard ..... :	IEC 60335-2-80:2002 (Second Edition) incl. A1:2004 in conjunction with IEC 60335-1:2001 (Fourth Edition), incl. A1:2004 EN 60335-2-80:2003, incl. A1:2004 in conjunction with EN 60335-1:2002, incl. A11:2004 and A1:2004 EN 50366:2003 + A1:2006 added by MEEI in attachment: IEC 60335-1:2001 /A2:2006 and EN 60335-1:2002 /A2:2006 /A12:2006/A13:2008
Test procedure..... :	CB Scheme
Non-standard test method..... :	N/A
Test Report Form No. ..... :	IEC60335_2_80B_mod
TRF Originator ..... :	KEMA (modified by Hungarian Institute for Testing and Certification of Electrical Equipment Kft. (MEEI Kft.) Member of the TÜV Rheinland group)
Master TRF ..... :	Dated 2005-06

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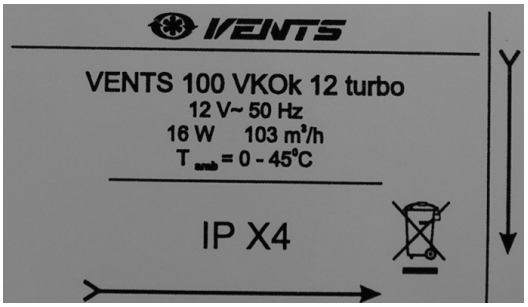
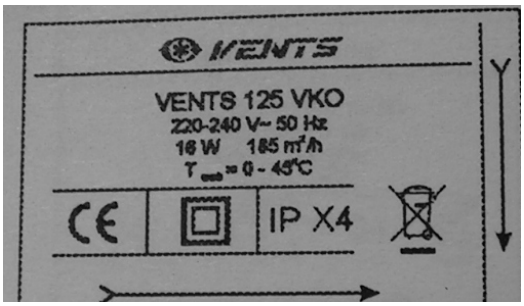
Test item description..... :	Fans
Trade Mark..... :	VENTS
Model/Type reference ..... :	VENTS xxx VKOy w z turbo; (model list on page 3)
Ratings..... :	220-240 V~, Class II; 12 V~, Class III; IP X4; for details see 'model list' on page 3

Copy of marking plate and summary of test results (information/comments):





Design of rating label of other models is identical to the above except for type designation, voltage, rated power and flow rate.

Summary of testing:

Tests were conducted on models 125 VKOk 12 turbo , 125 VKO. During the documentation check the English User's Manual was evaluated.

Manufacturer: Ventilation Systems JSC 1, Mikhaila Kotzubinskiego St., Kiev, UA-01030, Ukraine

Factory location: 36, 40-Richchya Zhovtnya Str. Boyarka 08150, Kiev Region, Ukraine.

The following standard amendments are added by MEEI in the Attachment 1:
- IEC 60335-1:2001 /A2: 2006
- EN 60335-1:2002 /A2: 2006
- EN 60335-1:2002 /A12: 2006
- EN 60335-1:2002 /A13: 2008

Attachments: 1: Standard amendments TRF (17 pages)
2: Measuring equipment list

This Test Report consists of two parts.

- first part contains requirements of IEC 60335-2-80:2002 incl. A1:2004 in conjunction with IEC 60335-1:2001, incl. A1:2004; EN 60335-2-80:2003, incl. A1:2004 in conjunction with EN 60335-1:2002, incl. A11:2004 and A1:2004 and EN 50366:2003 + A1:2006
- second part (1. attachment) contains requirements of IEC 60335-1:2001 /A2: 2006, EN 60335-1:2002 /A2: 2006, EN 60335-1:2002 /A12: 2006, EN 60335-1:2002 /A13: 2008

Model list, technical data:

Fan type	Classification	Rated voltage	Rated power	IP protection
VENTS 100 VKO	Class II	220-240V; 50Hz	14 W	IPX4
VENTS 100 VKO L			14 W	
VENTS 100 VKO turbo			16 W	
VENTS 100 VKOk			14 W	
VENTS 100 VKOk L			14 W	
VENTS 100 VKOk turbo			16 W	
VENTS 125 VKO			16 W	
VENTS 125 VKO L			16 W	
VENTS 125 VKO turbo			22 W	
VENTS 150 VKO			24 W	
VENTS 150 VKO L			24 W	
VENTS 150 VKO turbo			30 W	
VENTS 100 VKO 12	Class III	12 V; 50 Hz	14 W	
VENTS 100 VKOk 12			14 W	
VENTS 125 VKO 12			16 W	
VENTS 125 VKOk 12			16 W	
VENTS 150 VKO 12			24 W	
VENTS 150 VKOk 12			24 W	
VENTS 100 VKO 12 turbo			16 W	
VENTS 100 VKOk 12 turbo			16 W	
VENTS 125 VKO 12 turbo			20 W	
VENTS 125 VKOk 12 turbo			20 W	

Models differ in model name, rated power, shape of enclosure and bearing.

Test item particulars ..... :	-
Classification of installation and use ..... :	Class II, Class III
Supply Connection..... :	Permanent connection, supply cord is not provided
Possible test case verdicts:	
- test case does not apply to the test object..... :	**N**/A
- test object does meet the requirement ..... :	**P**(Pass)
- test object does not meet the requirement ..... :	**F**(Fail)
Testing ..... :	
Date of receipt of test item ..... :	03-02-2009
Date (s) of performance of tests ..... :	03-02-2009 – 05-02-2009

General remarks:

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

"(see Enclosure #)" refers to additional information appended to the report.
"(see appended table)" refers to a table appended to the report.

Throughout this report a point is used as the decimal separator.

General product information:

The fans are designed for ventilation of domestic and similar purposes and for continuous operation.

Meaning of characters in type references:

VENTS xxx VKOy w z turbo

- 'VENTS': trade mark
- 'xxx': the diameter of the duct [mm].It can be: 100; 125; 150
- 'VKO': indication of the series.
- 'y' can be: blank, k: modified enclosure shape
- 'w' can be: blank: (220-240 V~); or 12 V~
- 'z': can be: blank, L : long lasting bearing
- turbo: can be: blank, turbo (motor with increased power is installed)

Possible variants can be seen in table of model list, on page 3.

IEC 60335-2-80			
Clause	Requirement - Test	Result - Remark	Verdict
5	GENERAL CONDITIONS FOR THE TESTS		**P**
	Tests performed according to cl. 5, e.g. nature of supply, sequence of testing, etc.		**P**
5.7	Fans to be used in tropical climates, the tests of clause 10, 11 and 13 are carried out at 40℃ +/- 2℃ (IEC 60335-2-80)	Not for tropical climates.	**N**/A
	Fans to be marked with ambient operating temperature, the tests of clause 10, 11 and 13 are carried out at the marked value +/- 2℃ (IEC 60335-2-80)	Test of Clause 10, 11 and 13 are performed on the temperature of 45 ℃	**P**
6	CLASSIFICATION		**P**
6.1	Protection against electric shock: Class 0, 0I, I, II, III ..... :	Class II and III (12 V) (see Group differences too)	**P**
6.2	Protection against harmful ingress of water	IP X4	**P**
	Duct fans shall be at least IPX2 (IEC 60335-2-80)	See above.	**P**
6.101	Classification to climatic conditions : temperature climates, tropical climates (IEC 60335-2-80)	For temperate climate.	**P**
7	MARKING AND INSTRUCTIONS		**P**
7.1	Rated voltage or voltage range (V) ..... :	220-240 V; 12 V	**P**
	Nature of supply..... :	~	**P**
	Rated frequency (Hz) ..... :	50 Hz	**P**
	Rated power input (W) ..... :	14, 16, 20, 22, 24, 30 W for details see 'model list' on page 3.	**P**
	Rated current (A) ..... :	Rated power stated.	**N**/A
	Manufacturer's or responsible vendor's name, trademark or identification mark..... :	VENTS	**P**
	Model or type reference..... :	See copy of marking plate.	**P**
	Symbol 5172 of IEC 60417, for Class II appliances	See copy of marking plate.	**P**
	IP number, other than IPX0..... :	IP X4 See copy of marking plate.	**P**
	Symbol IEC 60417-5036, for the enclosure of electrically-operated water valves in external hose-sets for connection of an appliance to the water mains	No water valve.	**N**/A

IEC 60335-2-80			
Clause	Requirement - Test	Result - Remark	Verdict
	For tropical climates marked with letter T (IEC 60335-2-80)	Not for tropical climates.	**N**/A
	Fans intended for operation in locations where the local ambient temperature exceeds 40 °C marked with ambient operating temperature (IEC 60335-2-80)	45 °C is marked as Tmax.	**P**
7.2	Warning for stationary appliances for multiple supply		**N**/A
	Warning placed in vicinity of terminal cover		**N**/A
7.3	Range of rated values marked with the lower and upper limits separated by a hyphen	220-240 V; 12 V	**P**
	Different rated values marked with the values separated by an oblique stroke		**N**/A
7.4	Appliances adjustable for different rated voltages, the voltage setting is clearly discernible	Not adjustable.	**N**/A
7.5	Appliances with more than one rated voltage or one or more rated voltage ranges, marked with rated input or rated current for each rated voltage or range, unless		**N**/A
	the power input is related to the mean value of the rated voltage range	Difference is less than 10%	**P**
	Relation between marking for upper and lower limits of rated power input or rated current and voltage is clear		**N**/A
7.6	Correct symbols used		**P**
7.7	Connection diagram fixed to appliances to be connected to more than two supply conductors and appliances for multiple supply		**N/A**
7.8	Except for type Z attachment, terminals for connection to the supply mains indicated as follows:		**P**
	- marking of terminals exclusively for the neutral conductor (N)		**P**
	- marking of protective earthing terminals (symbol 5019 of IEC 60417)	Class II, III	**N**/A
	- marking not placed on removable parts		**P**
7.9	Marking or placing of switches which may cause a hazard	No such switch.	**N**/A
7.10	Indications of switches on stationary appliances and controls on all appliances by use of figures, letters or other visual means ..... :	-	**N**/A
	The figure 0 indicates only OFF position, unless no confusion with the OFF position		**N**/A

IEC 60335-2-80			
Clause	Requirement - Test	Result - Remark	Verdict
7.11	Indication for direction of adjustment of controls		**N**/A
7.12	Instructions for safe use provided		**P**
7.12.1	Sufficient details for installation supplied		**P**
	Type or model number of luminaries which may be installed for fans intended for this purpose (IEC 60335-2-80)		**N**/A
	For partition fans, if intended for mounting in outside walls or windows (IEC 60335-2-80)	No partition fans.	**N**/A
	For fans intended to be mounted at high level, fan has to be installed so that the blades are more than 2.3 m above the floor, or windows (IEC 60335-2-80)		**N**/A
	For duct and partition fans precautions taken to avoid back flow of gases into the room (IEC 60335-2-80)	User's Manual "Safety requirements" states the necessary warning	**P**
	If the instructions state that the guard has to be removed for cleaning purposes, the instructions shall state the substance of the following: "Ensure that the fan is switched off from the supply mains before removing guard." (IEC 60335-2-80)	No guard.	**N**/A
7.12.2	Stationary appliances not fitted with means for disconnection from the supply mains having a contact separation in all poles that provide full disconnection under overvoltage category III, the instructions state that means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules	User's Manual "Preparation to device operation" states the necessary disconnection	**P**
7.12.3	Insulation of the fixed wiring in contact with parts exceeding 50 K during clause 11; instructions stating that the fixed wiring must be protected		**N**/A
7.12.4	Instructions for built-in appliances:		**P**
	- dimensions of space	Duct fan	**P**
	- dimensions and position of supporting means		**P**
	- distances between parts and surrounding structure		**P**
	- dimensions of ventilation openings and arrangement		**P**
	- connection to supply mains and interconnection of separate components		**P**
	- allow disconnection of the appliance after installation, by accessible plug or a switch in the fixed wiring, unless		**N**/A

IEC 60335-2-80			
Clause	Requirement - Test	Result - Remark	Verdict
	a switch complying with 24.3		**N**/A
7.12.5	Replacement cord instructions, type X attachment with a specially prepared cord		**N**/A
	Replacement cord instructions, type Y attachment		**N**/A
	Replacement cord instructions, type Z attachment		**N**/A
7.12.6	Caution in the instructions for heating appliances with a non-self-resetting thermal cut-out	No heating appliances.	**N**/A
7.12.7	Instructions for fixed appliances stating how the appliance is to be fixed		**P**
7.12.8	Instructions for appliances connected to the water mains:		**N**/A
	- max. inlet water pressure (Pa) ..... :	No water mains.	**N**/A
	- min. inlet water pressure, if necessary (Pa)..... :	-	**N**/A
	Instructions concerning new and old hose-sets for appliances connected to the water mains by detachable hose-sets		**N**/A
7.13	Instructions and other texts in an official language	English and German provided.	**P**
7.14	Marking clearly legible and durable		**P**
7.15	Marking on a main part		**P**
	Marking clearly discernible from the outside, if necessary after removal of a cover	Marking label repeated inside too.	**P**
	For portable appliances, cover can be removed or opened without a tool		**N**/A
	For stationary appliances, name, trademark or identification mark and model or type reference visible after installation	.	**N**/A
	For fixed appliances, name, trademark or identification mark and model or type reference visible after installation according to the instructions		**P**
	Indications for switches and controls placed on or near the components. Marking not on parts which can be positioned or repositioned in such a way that the marking is misleading		**N**/A
7.16	Marking of a possible replaceable thermal link or fuse link clearly visible with regard to replacing the link	Non-replaceable thermal link provided.	**N**/A
8	PROTECTION AGAINST ACCESS TO LIVE PARTS		**P**
8.1	Adequate protection against accidental contact with live parts		**P**

IEC 60335-2-80			
Clause	Requirement - Test	Result - Remark	Verdict
8.1.1	Requirement applies for all positions, detachable parts removed		**P**
	Insertion or removal of lamps, protection against contact with live parts of the lamp cap		**N**/A
	Use of test probe B of IEC 61032: no contact with live parts		**P**
8.1.2	Use of test probe 13 of IEC 61032 through openings in class 0 appliances and class II appliances/ constructions: no contact with live parts	No contact.	**P**
	Test probe 13 also applied through openings in earthed metal enclosures having a non-conductive coating: no contact with live parts		**N**/A
8.1.3	For appliances other than class II, use of test probe 41 of IEC 61032: no contact with live parts of visible glowing heating elements		**N**/A
8.1.4	Accessible part not considered live if:		**P**
	- safety extra-low a.c. voltage: peak value not exceeding 42.4 V	12 V	**P**
	- safety extra-low d.c. voltage: not exceeding 42.4 V		**N**/A
	- or separated from live parts by protective impedance		**N**/A
	If protective impedance: d.c. current not exceeding 2 mA, and		**N**/A
	a.c. peak value not exceeding 0.7 mA		**N**/A
	- for peak values over 42.4 V up to and including 450 V, capacitance not exceeding 0,1 µF		**N**/A
	- for peak values over 450 V up to and including 15 kV, discharge not exceeding 45 µC		**N**/A
8.1.5	Live parts protected at least by basic insulation before installation or assembly:		**P**
	- built-in appliances		**N**/A
	- fixed appliances		**P**
	- appliances delivered in separate units		**N**/A
8.2	Class II appliances and constructions constructed so that there is adequate protection against accidental contact with basic insulation and metal parts separated from live parts by basic insulation only		**P**
	Only possible to touch parts separated from live parts by double or reinforced insulation		**P**

IEC 60335-2-80			
Clause	Requirement - Test	Result - Remark	Verdict
	After the removal of detachable parts for the purposes of user maintenance, the basic insulation of internal wiring may be touched provided that it is electrically equivalent to the insulation of cords complying with IEC 60227 or IEC 61245. (IEC 60335-2-80)		**N**/A
9	STARTING OF MOTOR-OPERATED APPLIANCES		**N**/A
	Requirements and tests are specified in part 2 when necessary		**N**/A
10	POWER INPUT AND CURRENT		**P**
10.1	Power input at normal operating temperature, rated voltage and normal operation not deviating from rated power input by more than shown in table 1	(See appended table)	**P**
	Shutters or similar devices are in open position (IEC 60335-2-80)		**N**/A
10.2	Current at normal operating temperature, rated voltage and normal operation not deviating from rated current by more than shown in table 2	Rated current is not marked.	**N**/A
	Shutters or similar devices are in open position (IEC 60335-2-80)		**N**/A
11	HEATING		**P**
11.1	No excessive temperatures in normal use		**P**
11.2	Placing and mounting of appliance as described	On horizontal support with a duct with a length of four times of the duct diameter (400mm).	**P**
11.3	Temperature rises, other than of windings, determined by thermocouples		**P**
	Temperature rises of windings determined by resistance method, unless		**P**
	the windings makes it difficult to make the necessary connections		**N**/A
11.4	Heating appliances operated under normal operation at 1.15 times rated power input ..... :	No heating appliances.	**N**/A
11.5	Motor-operated appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage..... :	254.4V (1.06x240V) and 12.72 V (1.06x12 V) were the most unfavourable for each model.	**P**

IEC 60335-2-80			
Clause	Requirement - Test	Result - Remark	Verdict
11.6	Combined appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage ..... :	-	**N**/A
11.7	Operation until steady conditions are established (IEC 60335-2-80)		**P**
11.8	Temperature rises not exceeding values in table 3	(See appended tables)	**P**
	Sealing compound does not flow out		**P**
	Protective devices do not operate, except		**P**
	components in protective electronic circuits tested for the number of cycles specified in 24.1.4		**N**/A
	Fans for tropical climates: Temperature limits are reduced by 15 K (IEC 60335-2-80)		**N**/A
	The temperature rise limits for fans marked with an ambient operating temperature are reduced by the difference between the marked value and 25°C (IEC 60335-2-80)		**P**
13	LEAKAGE CURRENT AND ELECTRIC STRENGTH AT OPERATING TEMPERATURE		**P**
13.1	Leakage current not excessive and electric strength adequate		**P**
	Heating appliances operated at 1.15 times rated power input ..... :	-	**N**/A
	Motor-operated appliances and combined appliances supplied at 1.06 times rated voltage ..... :	254.4V (1.06x240V) 12.72 V (1.06x12 V)	**P**
	Protective impedance and radio interference filters disconnected before carrying out the tests		**N**/A
13.2	Leakage current measured by means of the circuit described in figure 4 of IEC 60990		**P**
	Leakage current measurements	(See appended table)	**P**
13.3	The appliance is disconnected from the supply		**P**
	Electric strength tests according to table 4	(See appended table)	**P**
	No breakdown during the tests		**P**
14	TRANSIENT OVERVOLTAGES		**N**/A
	Appliances withstand the transient overvoltages to which they may be subjected		**N**/A

IEC 60335-2-80			
Clause	Requirement - Test	Result - Remark	Verdict
	Clearances having a value less than specified in table 16 subjected to an impulse voltage test, the test voltage specified in table 6	Clearances are not less than specified.	**N**/A
	No flashover during the test, unless of functional insulation		**N**/A
	In case of flashover of functional insulation, the appliance complies with clause 19 with the clearance short circuited		**N**/A
15	MOISTURE RESISTANCE		**P**
15.1	Enclosure provides the degree of moisture protection according to classification of the appliance		**P**
	Compliance checked as specified in 15.1.1, taking into account 15.1.2, followed by the electric strength test of 16.3		**P**
	No trace of water on insulation which can result in a reduction of clearances and creepage distances below values specified in clause 29		**P**
15.1.1	Appliances, other than IPX0, subjected to tests as specified in IEC 60529.....:	Tested for IP X4.	**P**
	Water valves in external hoses for connection of an appliance to the water mains tested as specified for IPX7 appliances		**N**/A
	Outer part of fans mounted in external structure of a building, subjected to clause 14.2.4(a) of IEC 60529 (IEC 60335-2-80)		**N**/A
	Fans marked with the second numeral of the IP system are subjected to the appropriate of IEC 60529 both at rest and in operation while supplied at rated voltage (IEC 60335-2-80)	Tested for IP X4.	**P**
15.1.2	Hand-held appliance turned continuously through the most unfavourable positions during the test		**N**/A
	Built-in appliances installed according to the instructions		**N**/A
	Appliances placed or used on the floor or table placed on a horizontal unperforated support		**N**/A
	Appliances normally fixed to a wall and appliances with pins for insertion into socket-outlets are mounted on a wooden board		**N**/A
	For IPX3 appliances, the base of wall mounted appliances is placed at the same level as the pivot axis of the oscillating tube		**N**/A

IEC 60335-2-80			
Clause	Requirement - Test	Result - Remark	Verdict
	For IPX4 appliances, the horizontal centre line of the appliance is aligned with the pivot axis of the oscillating tube		**P**
	However, for appliances normally used on the floor or table, the movement is limited to two times 90° for a period of 5 min, the support being placed at the level of the pivot axis of the oscillating tube		**N**/A
	Appliances normally fixed to a ceiling are mounted underneath a horizontal unperforated support, the pivot axis of the oscillating tube located at the level of the underside of the support		**N**/A
	For IPX4 appliances, the movement of the tube is limited to two times 90° from the vertical for a period of 5 min		**P**
	Wall-mounted appliances, take into account the distance to the floor stated in the instructions		**N**/A
	Appliances with type X attachment fitted with a flexible cord as described		**N**/A
	Detachable parts tested as specified		**N**/A
15.2	Spillage of liquid does not affect the electrical insulation	No spillage in normal condition.	**N**/A
	Appliances with type X attachment fitted with a flexible cord as described		**N**/A
	Appliances incorporating an appliance inlet tested with or without an connector, whichever is most unfavourable		**N**/A
	Detachable parts removed		**N**/A
	Overfilling test with additional amount of water, over a period of 1 min (l)..... :	-	**N**/A
	The appliance withstands the electric strength test of 16.3		**N**/A
	No trace of water on insulation that can result in a reduction of clearances and creepage distances below values specified in clause 29		**N**/A
15.3	Appliances proof against humid conditions	48h, 95%, 25℃	**P**
	Humidity test for 48 h in a humidity cabinet		**P**
	The appliance withstands the tests of clause 16		**P**

16	LEAKAGE CURRENT AND ELECTRIC STRENGTH		**P**
16.1	Leakage current not excessive and electric strength adequate		**P**

IEC 60335-2-80			
Clause	Requirement - Test	Result - Remark	Verdict
	Protective impedance disconnected from live parts before carrying out the tests		**N**/A
16.2	Single-phase appliances: test voltage 1.06 times rated voltage ..... :	254.4V (1.06x240V) 12.72 V (1.06x12 V)	**P**
	Three-phase appliances: test voltage 1.06 times rated voltage divided by √3..... :	-	**N**/A
	Leakage current measurements	(See appended table)	**P**
16.3	Electric strength tests according to table 7	(See appended table)	**P**
	No breakdown during the tests		**P**
17	OVERLOAD PROTECTION OF TRANSFORMERS AND ASSOCIATED CIRCUITS		**N**/A
	No excessive temperatures in transformer or associated circuits in event of short-circuits likely to occur in normal use	No transformers.	**N**/A
	Appliance supplied with 1.06 or 0.94 times rated voltage and the most unfavourable short-circuit or overload likely to occur in normal use applied ..... :	-	**N**/A
	Temperature rise of insulation of the conductors of safety extra-low voltage circuits not exceeding the relevant value specified in table 3 by more than 15 K		**N**/A
	Temperature of the winding not exceeding the value specified in table 8,		**N**/A
	however limits do not apply to fail-safe transformers complying with sub-clause 15.5 of IEC 61558-1		**N**/A
18	ENDURANCE		**N**/A
	Requirements and tests are specified in part 2 when necessary	Not applicable.	**N**/A
19	ABNORMAL OPERATION		**P**
19.1	The risk of fire or mechanical damage under abnormal or careless operation obviated		**P**
	Electronic circuits so designed and applied that a fault will not render the appliance unsafe		**P**
	Fans incorporating shutters or similar subjected to the test of cl. 19.101 (IEC 60335-2-80)	See cl. 19.101.	**N**/A
19.2	Test of appliance with heating elements with restricted heat dissipation; test voltage (V): power input of 0.85 times rated power input..... :	-	**N**/A

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Clause	Requirement - Test	Result - Remark	Verdict
19.3	Test of 19.2 repeated; test voltage (V): power input of 1.24 times rated power input..... :	-	**N**/A
19.4	Test conditions as in cl. 11, any control limiting the temperature during tests of cl. 11 short-circuited		**N**/A
19.5	Test of 19.4 repeated on Class 0I and I appliances with tubular sheathed or embedded heating elements. No short-circuiting, but one end of the element connected to the elements sheath		**N**/A
	The test repeated with reversed polarity and the other end of the heating element connected to the sheath		**N**/A
	The test is not carried out on appliances intended to be permanently connected to fixed wiring and on appliances where an all-pole disconnection occurs during the test of 19.4		**N**/A
19.6	Appliances with PTC heating elements tested at rated voltage, establishing steady conditions	No PTC.	**N**/A
	The working voltage of the PTC heating element is increased by 5% and the appliance is operated until steady conditions are re-established. The voltage is then increased in similar steps until 1.5 times working voltage or until the PTC heating element ruptures		**N**/A
19.7	Stalling test by locking the rotor if the locked rotor torque is smaller than the full load torque or locking moving parts of other appliances		**P**
	Locked rotor, motor capacitors open-circuited or short-circuited, if required	No motor-capacitor.	**N**/A
	Locked rotor, capacitors open-circuited one at a time		**N**/A
	Test repeated with capacitors short-circuited one at a time, if required		**N**/A
	Appliances with timer or programmer supplied with rated voltage for each of the tests, for a period equal to the maximum period allowed		**N**/A
	Other appliances supplied with rated voltage for a period as specified		**P**
	Separate controls are mounted on a dull-black plywood board (IEC 60335-2-80)	No such controls.	**N**/A
	Approximately 50% of the area of each ventilation opening is blocked (IEC 60335-2-80)		**N**/A
	Winding temperatures not exceeding values specified in table 8	(See appended table)	**P**

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Clause	Requirement - Test	Result - Remark	Verdict
	Temperature of the dull black-painted board for the separate control do not exceed: - 50K, for appliance with T marking - 65K, for other appliances (IEC 60335-2-80)	No such controls.	**N**/A
19.8	Three-phase motors operated at rated voltage with one phase disconnected	Single-phase motors.	**N**/A
19.10	Series motor operated at 1.3 times rated voltage for 1 min ..... :	No series motor.	**N**/A
	During the test, parts not being ejected from the appliance		**N**/A
19.11	Electronic circuits, compliance checked by evaluation of the fault conditions specified in 19.11.2 for all circuits or parts of circuits, unless they comply with the conditions specified in 19.11.1		**N**/A
	Appliances incorporating a protective electronic circuit subjected to the tests of 19.11.3 and 19.11.4		**N**/A
	Appliances having a switch with an off position obtained by electronic disconnection, or a switch placing the appliance in a stand-by mode, subjected to the tests of 19.11.4		**N**/A
19.11.1	Before applying the fault conditions a) to f) in 19.11.2, it is checked if circuits or parts of circuit meet both of the following conditions:		**N**/A
	- the electronic circuit is a low-power circuit, that is, the maximum power at low-power points does not exceed 15 W according to the tests specified		**N**/A
	- the protection against electric shock, fire hazard, mechanical hazard or dangerous malfunction in other parts of the appliance does not rely on the correct functioning of the electronic circuit		**N**/A
19.11.2	Fault conditions applied one at a time, the appliance operated under conditions specified in cl. 11, but supplied at rated voltage, the duration of the tests as specified:		**N**/A
	a) short circuit of functional insulation if clearances or creepage distances are less than the values specified in 29		**N**/A
	b) open circuit at the terminals of any component		**N**/A
	c) short circuit of capacitors, unless they comply with IEC 60384-14		**N**/A
	d) short circuit of any two terminals of an electronic component, other than integrated circuits. This fault condition is not applied between the two circuits of an optocoupler		**N**/A
	e) failure of triacs in the diode mode		**N**/A
	f) failure of an integrated circuit		**N**/A

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Clause	Requirement - Test	Result - Remark	Verdict
19.11.3	If the appliance incorporates a protective electronic circuit which operates to ensure compliance with clause 19, the relevant test is repeated with a single fault simulated, as indicated in a) to f) of 19.11.2	No protective electronic circuit.	**N**/A
	During and after each test the following is checked:		**N**/A
	- the temperature rise of the windings do not exceed the values specified in table 8		**N**/A
	- the appliance complies with the conditions specified in 19.13		**N**/A
	- any current flowing through protective impedance not exceeding the limits specified in 8.1.4		**N**/A
	If a conductor of a printed board becomes open-circuited, the appliance is considered to have withstood the particular test, provided all three of the following conditions are met:		**N**/A
	- the material of the printed circuit board withstands the burning test of annex E		**N**/A
	- any loosened conductor does not reduce the clearances or creepage distances between live parts and accessible metal parts below the values specified in cl. 29		**N**/A
	- the appliance withstands the tests of 19.11.2 with open-circuited conductor bridged		**N**/A
19.11.4	Appliances having a switch with an off position obtained by electronic disconnection, or		**N**/A
	a switch that can be placed in the stand-by mode,		**N**/A
	subjected to the tests of 19.11.4.1 to 19.11.4.7		**N**/A
	Appliances incorporating a protective electronic circuit subjected to the tests of 19.11.4.1 to 19.11.4.7, except that		**N**/A
	appliances operated for 30 s or 5 min during the test of 19.7 are not subjected to the tests for electromagnetic phenomena.		**N**/A
19.11.4.1	The appliance is subjected to electrostatic discharges in accordance with IEC 61000-4-2, test level 4		**N**/A
19.11.4.2	The appliance is subjected to radiated fields in accordance with IEC 61000-4-3, test level 3		**N**/A
19.11.4.3	The appliance is subjected to fast transient bursts in accordance with IEC 61000-4-4, test level 3 or 4 as specified		**N**/A
19.11.4.4	The power supply terminals of the appliance subjected to voltage surges in accordance with IEC 61000-4-5, test level 3 or 4 as specified		**N**/A

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Clause	Requirement - Test	Result - Remark	Verdict
	Earthed heating elements in class I appliances disconnected		**N**/A
19.11.4.5	The appliance is subjected to injected currents in accordance with IEC 61000-4-6, test level 3		**N**/A
19.11.4.6	The appliance is subjected to voltage dips and interruptions in accordance with IEC 61000-4-11		**N**/A
19.11.4.7	The appliance is subjected to mains signals in accordance with IEC 61000-4-13, test level class 2		**N**/A
19.12	If the safety of the appliance for any of the fault conditions specified in 19.11.2 depends on the operation of a miniature fuse-link complying with IEC 60127, the test is repeated, measuring the current flowing through the fuse-link; measured current (A); rated current of the fuse-link (A) ..... :	-	**N**/A
19.13	During the tests the appliance does not emit flames, molten metal, poisonous or ignitable gas in hazardous amounts		**P**
	Temperature rises not exceeding the values shown in table 9	(see appended table)	**P**
	Enclosures not deformed to such an extent that compliance with cl. 8 is impaired		**P**
	If the appliance can still be operated it complies with 20.2		**N**/A
	Insulation, other than of class III appliance, withstand the electric strength test of 16.3, the test voltage specified in table 4:		**P**
	- basic insulation ..... :	L/N and motor surface (1000V) Live and surface (500 V) (12 V)	**P**
	- supplementary insulation ..... :	Motor surface and enclosure wrapped into metal foil (1750V)	**P**
	- reinforced insulation ..... :	L/N and enclosure wrapped into metal foil (3000V)	**P**
	The appliance does not undergo a dangerous malfunction, and		**P**
	no failure of protective electronic circuits, if the appliance is still operable		**N**/A
	Appliances tested with an electronic switch in the off position or in the stand-by mode, do not become operational		**N**/A
19.101	Fans incorporating shutters or similar that are operated automatically are supplied at rated voltage in the closed or open position, whichever is more unfavourable (IEC 60335-2-80)		**N**/A

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Clause	Requirement - Test	Result - Remark	Verdict
20	STABILITY AND MECHANICAL HAZARDS		**P**
20.1	Adequate stability	Appliance shall be installed properly according to the User's Manual.	**N**/A
	Tilting test through an angle of 10° (appliance placed on an inclined plane/horizontal plane); appliance does not overturn		**N**/A
	Tilting test repeated on appliances with heating elements, angle of inclination increased to 15°		**N**/A
	Possible heating test in overturned position; temperature rise does not exceed values shown in table 9		**N**/A
	Portable pedestal fans exceeding 1,7 m and exceeding 10 kg tested with a force of 40 N at 1,5 m (IEC 60335-2-80)	No such fans.	**N**/A
20.2	Moving parts adequately arranged or enclosed as to provide protection against personal injury		**P**
	Protective enclosures, guards and similar parts are non-detachable		**P**
	Adequate mechanical strength and fixing of protective enclosures		**P**
	Self-resetting thermal cut-outs and overcurrent protective devices not causing a hazard, by unexpected reclosure	No such cut-outs.	**N**/A
	Not possible to touch dangerous moving parts with test probe		**P**
20.101	Fan blades, other than those for mounting at high level, shall be guarded, unless (IEC 60335-2-80)	Blades are guarded after the installation according the User's Manual by the duct	**P**
21	MECHANICAL STRENGTH		**P**
21.1	Appliance has adequate mechanical strength and is constructed as to withstand rough handling		**P**
	Checked by applying blows to the appliance in accordance with test Ehb of IEC 60068-2-75, spring hammer test, impact energy 0,5 J		**P**
	If necessary, supplementary or reinforced insulation subjected to the electric strength test of 16.3		**N**/A
	If necessary, repetition of groups of three blows on a new sample		**N**/A

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Clause	Requirement - Test	Result - Remark	Verdict
21.2	Accessible parts of solid insulation having strength to prevent penetration by sharp implements		**P**
	The insulation is tested as specified, unless		**N**/A
	the thickness of supplementary insulation is at least 1 mm and reinforced insulation is at least 2 mm		**P**
21.101	Fan guards are subjected to a push and pull force of 20 N. Dangerous moving parts are not accessible (IEC 60335-2-80)	Blades are guarded after the installation according the User's Manual by the duct	**P**
21.102	Ceiling fans have adequate strength. (IEC 60335-2-80)	No such fans.	**N**/A
	Load four times the mass of the fan is suspended from the body of the fan for 1 min. (IEC 60335-2-80)		**N**/A
	A torque of 1 Nm is then applied to the fixed body of the fan for 1 min. The test is repeated with the torque applied the reverse direction. (IEC 60335-2-80)		**N**/A
22	CONSTRUCTION		**P**
22.1	Appliance marked with the first numeral of the IP system, relevant requirements of IEC 60529 are fulfilled		**N**/A
22.2	Stationary appliance: means to provide all-pole disconnection from the supply provided, the following means being available:		**P**
	- a supply cord fitted with a plug		**N**/A
	- a switch complying with 24.3	No switch with all-pole disconnection.	**N**/A
	- a statement in the instruction sheet that a disconnection incorporated in the fixed wiring is to be provided	Statement in the User's Manual.	**P**
	- an appliance inlet	No appliance inlet.	**N**/A
	Singe-pole switches and single-pole protective devices for the disconnection of heating elements in single-phase permanently connected class I appliances, connected in the phase conductor		**N**/A
22.3	Appliance provided with pins: no undue strain on socket-outlets	No pins.	**N**/A
	Applied torque not exceeding 0.25 Nm		**N**/A
	Pull force of 50N to each pin after the appliance has being placed in the heating cabinet; when cooled to room temperature the pins are not displaced by more than 1mm		**N**/A

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Clause	Requirement - Test	Result - Remark	Verdict
	Each pin subjected to a torque of 0.4Nm; the pins are not rotating unless rotating does not impair compliance with the standard		**N**/A
22.4	Appliance for heating liquids and appliance causing undue vibration not provided with pins for insertion into socket-outlets	No such appliance.	**N**/A
22.5	No risk of electric shock when touching the pins of the plug, the appliance being disconnected from the supply at the instant of voltage peak.		**N**/A
22.6	Electrical insulation not affected by condensing water or leaking liquid		**N**/A
	Electrical insulation of Class II appliances not affected in case of a hose rupture or seal leak		**N**/A
22.7	Adequate safeguards against the risk of excessive pressure in appliances provided with steam-producing devices	No steam.	**N**/A
22.8	Electrical connections not subject to pulling during cleaning of compartments to which access can be gained without the aid of a tool, and that are likely to be cleaned in normal use	No such cleaning.	**N**/A
22.9	Insulation, internal wiring, windings, commutators and slip rings not exposed to oil, grease or similar substances		**P**
	Adequate insulating properties of oil or grease to which insulation is exposed		**N**/A
22.10	Not possible to reset voltage-maintained non-self-resetting thermal cut-outs by the operation of an automatic switching device incorporated within the appliance	No such kind of devices.	**N**/A
	Non-self resetting thermal motor protectors have a trip-free action, unless		**N**/A
	they are voltage maintained		**N**/A
	Location or protection of reset buttons of non-self-resetting controls is so that accidental resetting is unlikely		**N**/A
22.11	Reliable fixing of non-detachable parts that provide the necessary degree of protection against electric shock, moisture or contact with moving parts		**P**
	Obvious locked position of snap-in devices used for fixing such parts		**P**
	No deterioration of the fixing properties of snap-in devices used in parts that are likely to be removed during installation or servicing		**P**

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Clause	Requirement - Test	Result - Remark	Verdict
	Tests as described		**P**
22.12	Handles, knobs etc. fixed in a reliable manner		**N**/A
	Fixing in wrong position of handles, knobs etc. indicating position of switches or similar components not possible		**N**/A
	Axial force 15 N applied to parts, the shape being so that an axial pull is unlikely to be applied		**N**/A
	Axial force 30 N applied to parts, the shape being so that an axial pull is likely to be applied		**N**/A
22.13	Unlikely that handles, when gripped as in normal use, make the operators hand touch parts having a temperature rise exceeding the value specified for handles which are held for short periods only		**N**/A
22.14	No ragged or sharp edges creating a hazard for the user in normal use, or during user maintenance	Verified by visual inspection.	**P**
	No exposed pointed ends of self tapping screws etc., liable to be touched by the user in normal use or during user maintenance		**P**
22.15	Storage hooks and the like for flexible cords smooth and well rounded		**N**/A
22.16	Automatic cord reels cause no undue abrasion or damage to the sheath of the flexible cord, no breakage of conductors strands, no undue wear of contacts	No automatic cord reel.	**N**/A
	Cord reel tested with 6000 operations, as specified		**N**/A
	Electric strength test of 16.3, voltage of 1000 V applied		**N**/A
22.17	Spacers not removable from the outside by hand or by means of a screwdriver or a spanner	No spacers.	**N**/A
22.18	Current-carrying parts and other metal parts resistant to corrosion under normal conditions of use		**P**
22.19	Driving belts not used as electrical insulation	No driving belt.	**N**/A
22.20	Direct contact between live parts and thermal insulation effectively prevented, unless material used is non-corrosive, non-hygroscopic and non-combustible	Verified by visual inspection.	**N**/A
	Compliance is checked by inspection and, if necessary, by appropriate test		**N**/A
22.21	Wood, cotton, silk, ordinary paper and fibrous or hygroscopic material not used as insulation, unless impregnated	No such material.	**P**
22.22	Appliances not containing asbestos	No asbestos.	**P**

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Clause	Requirement - Test	Result - Remark	Verdict
22.23	Oils containing polychlorinated biphenyl (PCB) not used		**P**
22.24	Bare heating elements adequately supported	No heating elements.	**N**/A
	In case of rupture, the heating conductor is unlikely to come in contact with accessible metal parts		**N**/A
22.25	Sagging heating conductors cannot come into contact with accessible metal parts		**N**/A
22.26	The insulation between parts operating at safety extra-low voltage and other live parts complies with the requirements for double or reinforced insulation	No such parts.	**N**/A
22.27	Parts connected by protective impedance separated by double or reinforced insulation	No protective impedance.	**N**/A
22.28	Metal parts of Class II appliances conductively connected to gas pipes or in contact with water: separated from live parts by double or reinforced insulation		**N**/A
22.29	Class II appliances permanently connected to fixed wiring so constructed that the required degree of access to live parts is maintained after installation	Compliance is checked by visual inspection.	**P**
22.30	Parts serving as supplementary or reinforced insulation fixed so that they cannot be removed without being seriously damaged, or		**N**/A
	so constructed that they cannot be replaced in an incorrect position, and so that if they are omitted, the appliance is rendered inoperable or manifestly incomplete		**P**
22.31	Clearances and creepage distances over supplementary and reinforced insulation not reduced below values specified in clause 29 as a result of wear		**P**
	Clearances and creepage distances between live parts and accessible parts not reduced below values for supplementary insulation, if wires, screws etc. become loose		**P**
22.32	Supplementary and reinforced insulation designed or protected against deposition of dirt or dust		**P**
	Supplementary insulation of natural or synthetic rubber resistant to ageing, or arranged and dimensioned so that creepage distances are not reduced below values specified in 29.2		**N**/A
	Ceramic material not tightly sintered, similar material or beads alone not used as supplementary or reinforced insulation		**N**/A

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Clause	Requirement - Test	Result - Remark	Verdict
	Oxygen bomb test at 70 °C for 96 h and 16 h at room temperature		**N**/A
22.33	Conductive liquids that are or may become accessible in normal use are not in direct contact with live parts	No liquid.	**N**/A
	Electrodes not used for heating liquids		**N**/A
	For class II constructions, conductive liquids that are or may become accessible in normal use, not in direct contact with basic or reinforced insulation		**N**/A
	For class II constructions, conductive liquids which are in contact with live parts, not in direct contact with reinforced insulation		**N**/A
22.34	Shafts of operating knobs, handles, levers etc. not live, unless the shaft is not accessible when the part is removed		**N**/A
22.35	Handles, levers and knobs, held or actuated in normal use, not becoming live in the event of an insulation fault	Not hand-held use.	**N**/A
	Such parts being of metal, and their shafts or fixings are likely to become live in the event of an insulation fault, they are either adequately covered by insulation material, or their accessible parts are separated from their shafts or fixings by supplementary insulation		**N**/A
	This requirement does not apply to handles, levers and knobs on stationary appliances other than those of electrical components, provided they are either reliably connected to an earthing terminal or earthing contact, or separated from live parts by earthed metal		**N**/A
22.36	Handles continuously held in the hand in normal use are so constructed that when gripped as in normal use, the operators hand is not likely to touch metal parts, unless they are separated from live parts by double or reinforced insulation	Not hand-held use.	**N**/A
22.37	Capacitors in Class II appliances not connected to accessible metal parts, unless complying with 22.42		**N**/A
	Metal casings of capacitors in Class II appliances separated from accessible metal parts by supplementary insulation, unless complying with 22.42		**N**/A
22.38	Capacitors not connected between the contacts of a thermal cut-out		**N**/A
22.39	Lamp holders used only for the connection of lamps		**N**/A

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Clause	Requirement - Test	Result - Remark	Verdict
22.40	Motor-operated appliances and combined appliances intended to be moved while in operation, or having accessible moving parts, fitted with a switch to control the motor. The actuating member of the switch being easily visible and accessible	Not movable appliance.	**N**/A
22.41	No components, other than lamps, containing mercury	No mercury.	**P**
22.42	Protective impedance consisting of at least two separate components		**N**/A
	Values specified in 8.1.4 not exceeded if any one of the components are short-circuited or open-circuited		**N**/A
22.43	Appliances adjustable for different voltages, accidental changing of the setting of the voltage unlikely to occur	Not adjustable.	**N**/A
22.44	Appliances are not allowed to have an enclosure that is shaped and decorated so that the appliance is likely to be treated as a toy by children	Not like a toy.	**P**
22.45	When air is used as reinforced insulation, clearances not reduced below the values specified in 29.1.4 due to deformation as a result of an external force applied to the enclosure		**N**/A
22.46	Software used in protective electronic circuits is software class B or C ..... :	No software.	**N**/A
22.47	Appliances connected to the water mains withstand the water pressure expected in normal use	No connection to the water.	**N**/A
	No leakage from any part, including any inlet water hose		**N**/A
22.48	Appliances connected to the water mains constructed to prevent backsiphonage of non-potable water		**N**/A
22.101	Appliances having provision for attaching a luminaire incorporate appropriate terminals and internal wiring (IEC 60335-2-80)		**N**/A
23	INTERNAL WIRING		**P**
23.1	Wireways smooth and free from sharp edges		**P**
	Wires protected against contact with burrs, cooling fins etc.		**P**
	Wire holes in metal well rounded or provided with bushings	No such parts.	**N**/A
	Wiring effectively prevented from coming into contact with moving parts	The internal wiring is properly fixed.	**P**

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Clause	Requirement - Test	Result - Remark	Verdict
23.2	Beads etc. on live wires cannot change their position, and are not resting on sharp edges or corners	No beads.	**N**/A
	Beads inside flexible metal conduits contained within an insulating sleeve		**N**/A
23.3	Electrical connections and internal conductors movable relatively to each other not exposed to undue stress		**N**/A
	Flexible metallic tubes not causing damage to insulation of conductors	No such parts.	**N**/A
	Open-coil springs not used		**N**/A
	Adequate insulating lining provided inside a coiled spring, the turns of which touch one another		**N**/A
	No damage after 100 000 flexings for conductors flexed during normal use and at rated voltage (IEC 60335-2-80)		**N**/A
	Electric strength test, 1000 V between live parts and accessible metal parts		**N**/A
23.4	Bare internal wiring sufficiently rigid and fixed	No bare internal wiring.	**N**/A
23.5	The insulation of internal wiring withstanding the electrical stress likely to occur in normal use		**P**
	No breakdown when a voltage of 2000 V is applied for 15 min between the conductor and metal foil wrapped around the insulation		**P**
23.6	Sleeving used as supplementary insulation on internal wiring retained in position by positive means		**N**/A
23.7	The colour combination green/yellow used only for earthing conductors	Green/yellow is not used in appliance.	**N**/A
23.8	Aluminium wires not used for internal wiring	No aluminium wire.	**P**
23.9	No lead-tin soldering of stranded conductors where they are subject to contact pressure, unless	No soldering for this reason.	**P**
	clamping means so constructed that there is no risk of bad contact due to cold flow of the solder		**N**/A
23.10	The insulation and sheath of internal wiring, incorporated in external hoses for the connection of an appliance to the water mains, at least equivalent to that of light polyvinyl chloride sheathed flexible cord (60227 IEC 52)		**N**/A
24	COMPONENTS		**P**
24.1	Components comply with safety requirements in relevant IEC standards		**P**

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Clause	Requirement - Test	Result - Remark	Verdict
	List of components	(see appended table)	**P**
	Components not tested and found to comply with relevant IEC standard for the number of cycles specified are tested in accordance with 24.1.1 to 24.1.6		**N**/A
	Components not tested and found to comply with relevant IEC standard, components not marked or not used in accordance with its marking, tested under the conditions occurring in the appliance		**N**/A
24.1.1	Capacitors likely to be permanently subjected to the supply voltage and used for radio interference suppression or for voltage dividing, complying with IEC 60384-14, or		**N**/A
	tested according to annex F		**N**/A
24.1.2	Safety isolating transformers complying with IEC 61558-2-6, or	No transformers.	**N**/A
	tested according to annex G		**N**/A
24.1.3	Switches complying with IEC 61058-1, the number of cycles of operation being at least 10 000, or		**N**/A
	tested according to annex H		**N**/A
	If the switch operates a relay or contactor, the complete switching system is subjected to the test		**N**/A
24.1.4	Automatic controls complying with IEC 60730-1 with relevant part 2. The number of cycles of operation being:		**N**/A
	- thermostats: 10 000		**N**/A
	- temperature limiters: 1 000		**N**/A
	- self-resetting thermal cut-outs: 300		**N**/A
	- voltage maintained non-self-resetting thermal cut-outs: 1000		**N**/A
	- other non-self-resetting thermal cut-outs: 30	Thermal link used	**N**/A
	- timers: 3 000		**N**/A
	- energy regulators: 10 000		**N**/A
	Thermal motor protectors are tested in combination with their motor under the conditions specified in Annex D		**N**/A
	For water valves containing live parts and that are incorporated in external hoses for connection of an appliance to the water mains, the degree of protection declared for subclause 6.5.2 of IEC 60730-2-8 is IPX7		**N**/A

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Clause	Requirement - Test	Result - Remark	Verdict
24.1.5	Appliance couplers complying with IEC 60320-1	No appliance coupler.	**N**/A
	However, appliances classified higher than IPX0, the appliance couplers complying with IEC 60320-2-3		**N**/A
	Interconnection couplers complying with IEC 60320-2-2		**N**/A
24.1.6	Small lamp holders similar to E10 lampholders complying with IEC 60238, the requirements for E10 lampholders being applicable		**N**/A
24.2	Switches or automatic controls in flexible cords are allowed for appliances not exceeding 25 W (IEC 60335-2-80)		**N**/A
	No devices causing the protective device in the fixed wiring to operate in the event of a fault in the appliance		**N**/A
	No thermal cut-outs that can be reset by soldering		**N**/A
24.3	Switches intended for all-pole disconnection of stationary appliances are directly connected to the supply terminals and having a contact separation in all poles, providing full disconnection under overvoltage category III conditions		**N**/A
24.4	Plugs and socket-outlets for extra-low voltage circuits and heating elements, not interchangeable with plugs and socket-outlets listed in IEC 60083 or IEC 60906-1 or with connectors and appliance inlets complying with the standard sheets of IEC 60320-1	No such appliance or circuit.	**N**/A
24.5	Capacitors in auxiliary windings of motors marked with their rated voltage and capacitance and used accordingly	No auxiliary windings.	**N**/A
	Voltage across capacitors in series with a motor winding does not exceed 1,1 times rated voltage, when the appliance is supplied at 1,1 times rated voltage under minimum load		**N**/A
24.6	Working voltage of motors connected to the supply mains and having basic insulation that is inadequate for the rated voltage of the appliance, not exceeding 42V		**N**/A
	In addition, the motors are complying with the requirements of Annex I		**N**/A
24.7	Hose-sets for connection of appliances to the water mains, complying with IEC 61770 and supplied with the appliance		**N**/A
24.101	Thermal cut-outs in duct fans in order to comply with cl. 19 are not self-resetting (IEC 60335-2-80)	Approved thermal link.	**P**

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Clause	Requirement - Test	Result - Remark	Verdict
25	SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CORDS		**P**
25.1	Appliance not intended for permanent connection to fixed wiring, means for connection to the supply:		**N**/A
	- supply cord fitted with a plug		**N**/A
	- an appliance inlet having at least the same degree of protection against moisture as required for the appliance		**N**/A
	- pins for insertion into socket-outlets		**N**/A
25.2	Appliance not provided with more than one means of connection to the supply mains	Only one supply connection.	**P**
	Stationary appliance for multiple supply may be provided with more than one means of connection, provided electric strength test of 1250 V for 1 min between each means of connection causes no breakdown		**N**/A
25.3	Connection of supply conductors for appliance intended to be permanently connected to fixed wiring possible after the appliance has been fixed to its support		**P**
	Appliance provided with a set of terminals for the connection of cables or fixed wiring, cross-sectional areas specified in 26.6		**N**/A
	Appliance provided with a set of terminals allowing the connection of a flexible cord		**P**
	Appliance provided with a set of supply leads accommodated in a suitable compartment		**N**/A
	Appliance provided with a set of terminals and cable entries, conduit entries, knock-outs or glands, allowing connection of appropriate type of cable or conduit		**N**/A
25.4	Cable and conduit entries, rated current of appliance not exceeding 16 A, dimension according to table 10		**P**
	Introduction of conduit or cable does not reduce clearances or creepage distances below values specified in 29		**P**
25.5	Method for assemble supply cord with the appliance:		**P**
	- type X attachment		**N**/A
	- type Y attachment		**N**/A
	- type Z attachment is allowed for portable fans (IEC 60335-2-80)		**N**/A

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Clause	Requirement - Test	Result - Remark	Verdict
	Type X attachment, other than those with a specially prepared cord, not used for flat twin tinsel cords		**N**/A
25.6	Plugs fitted with only one flexible cord		**N**/A
25.7	Supply cord not lighter than:		**N**/A
	- braided cord (60245 IEC 51)	Not provided.	**N**/A
	- ordinary tough rubber sheathed cord (60245 IEC 53)		**N**/A
	- ordinary polychloroprene sheathed flexible cord (60245 IEC 57)		**N**/A
	- flat twin tinsel cord (60227 IEC 41)		**N**/A
	- light polyvinyl chloride sheathed cord (60227 IEC 52), appliance not exceeding 3 kg		**N**/A
	- ordinary polyvinyl chloride sheathed cord (60227 IEC 53), appliance exceeding 3 kg		**N**/A
	Temperature rise of external metal parts exceeding 75 K, PVC cord not used, unless		**N**/A
	appliance so constructed that the supply cord is not likely to touch external metal parts in normal use, or		**N**/A
	the supply cord is appropriate for higher temperatures, type Y or type Z attachment used		**N**/A
25.8	Nominal cross-sectional area of supply cords according to table 11; rated current (A); cross-sectional area (mm²) ..... :	Not provided.	**N**/A
25.9	Supply cord not in contact with sharp points or edges		**N**/A
25.10	Green/yellow core for earthing purposes in Class I appliance		**N**/A
25.11	Conductors of supply cords not consolidated by lead-tin soldering where they are subject to contact pressure, unless		**N**/A
	clamping means so constructed that there is no risk of bad contacts due to cold flow of the solder		**N**/A
25.12	Moulding the cord to part of the enclosure does not damage the insulation of the supply cord		**N**/A
25.13	Inlet opening so shaped as to prevent damage to the supply cord		**P**
	Unless the enclosure at the inlet opening is of insulation material, a non-detachable lining or bushing complying with 29.3 for supplementary insulation provided		**N**/A

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Clause	Requirement - Test	Result - Remark	Verdict
	If unsheathed supply cord, a similar additional bushing or lining is required, unless		**N**/A
	the appliance is class 0		**N**/A
25.14	Supply cords adequately protected against excessive flexing		**N**/A
	Flexing test:		**N**/A
	- applied force (N) ..... :	-	**N**/A
	- number of flexings ..... :	-	**N**/A
	The test does not result in:		**N**/A
	- short circuit between the conductors		**N**/A
	- breakage of more than 10% of the strands of any conductor		**N**/A
	- separation of the conductor from its terminal		**N**/A
	- loosening of any cord guard		**N**/A
	- damage, within the meaning of the standard, to the cord or the cord guard		**N**/A
	- broken strands piercing the insulation and becoming accessible		**N**/A
25.15	Conductors of the supply cord relieved from strain, twisting and abrasion by use of cord anchorage	Cord anchorage provided.	**P**
	The cord cannot be pushed into the appliance to such an extent that the cord or internal parts of the appliance can be damaged		**P**
	Pull and torque test of supply cord, values shown in table 10: pull (N); torque (not on automatic cord reel) (Nm) ..... :	30 N; 0.1 Nm	**P**
	Max. 2 mm displacement of the cord, and conductors not moved more than 1 mm in the terminals		**P**
	Creepage distances and clearances not reduced below values specified in 29.1		**P**
25.16	Cord anchorages for type X attachments constructed and located so that:		**N**/A
	- replacement of the cord is easily possible		**N**/A
	- it is clear how the relief from strain and the prevention of twisting are obtained		**N**/A
	- they are suitable for different types of cord		**N**/A
	- cord cannot touch the clamping screws of cord anchorage if these screws are accessible, unless separated from accessible metal parts by supplementary insulation		**N**/A

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Clause	Requirement - Test	Result - Remark	Verdict
	- the cord is not clamped by a metal screw which bears directly on the cord		**N**/A
	- at least one part of the cord anchorage securely fixed to the appliance, unless part of a specially prepared cord		**N**/A
	- screws which have to be operated when replacing the cord do not fix any other component, if applicable		**N**/A
	- if labyrinths can be bypassed the test of 25.15 is nevertheless withstood		**N**/A
	- for Class 0, 0I and I appliances: they are of insulating material or are provided with an insulating lining, unless a failure of the insulation of the cord does not make accessible metal parts live		**N**/A
	- for Class II appliances: they are of insulating material, or if of metal, they are insulated from accessible metal parts by supplementary insulation		**N**/A
25.17	Adequate cord anchorages for type Y and Z attachment		**N**/A
25.18	Cord anchorages only accessible with the aid of a tool, or		**P**
	so constructed that the cord can only be fitted with the aid of a tool		**N**/A
25.19	Type X attachment, glands not used as cord anchorage in portable appliances		**N**/A
	Tying the cord into a knot or tying the cord with string not used		**N**/A
25.20	Conductors of the supply cord for type Y and Z attachment adequately additionally insulated		**N**/A
25.21	Space for supply cord for type X attachment or for connection of fixed wiring constructed to permit checking of conductors with respect to correct positioning and connection before fitting any cover, no risk of damage to the conductors when fitting the cover, no contact with accessible metal parts if a conductor becomes loose, etc.		**P**
	For portable appliances, the uninsulated end of a conductor prevented from any contact with accessible metal parts, unless the end of the cord is such that the conductors are unlikely to slip free		**N**/A
25.22	Appliance inlet:		**N**/A
	- live parts not accessible during insertion or removal		**N**/A
	- connector can be inserted without difficulty		**N**/A

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Clause	Requirement - Test	Result - Remark	Verdict
	- the appliance is not supported by the connector		**N**/A
	- is not for cold conditions if temp. rise of external metal parts exceeds 75 K, unless the supply cord is not likely to touch such metal parts		**N**/A
25.23	Interconnection cords comply with the requirements for the supply cord, except as specified	No interconnection cord.	**N**/A
	If necessary, electric strength test of 16.3		**N**/A
25.24	Interconnection cords not detachable without the aid of a tool if compliance with the standard is impaired when they are disconnected		**N**/A
25.25	Dimensions of pins compatible with the dimensions of the relevant socket-outlet. Dimensions of pins and engagement face in accordance with the relevant plug in IEC 60083		**N**/A
26	TERMINALS FOR EXTERNAL CONDUCTORS		**P**
26.1	Appliances provided with terminals or equally effective devices for connection of external conductors	Terminal block provided.	**P**
	Terminals only accessible after removal of a non-detachable cover		**P**
	However, earthing terminals may be accessible if a tool is required to make the connections and means are provided to clamp the wire independently from its connection		**N**/A
26.2	Appliances with type X attachment and appliances for connection to fixed wiring provided with terminals in which connections are made by means of screws, nuts or similar devices, unless the connections are soldered	By screw.	**P**
	Screws and nuts serve only to clamp supply conductors, except		**P**
	internal conductors, if so arranged that they are unlikely to be displaced when fitting the supply conductors		**P**
	If soldered connections used, the conductor so positioned or fixed that reliance is not placed on soldering alone	Soldered connection is not used.	**N**/A
	Soldering alone used, barriers provided, clearances and creepage distances satisfactory if the conductor becomes free at the soldered joint		**N**/A

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Clause	Requirement - Test	Result - Remark	Verdict
26.3	Terminals for type X attachment and for connection to fixed wiring so constructed that the conductor is clamped between metal surfaces with sufficient contact pressure and without damaging the conductor		**P**
	Terminals for type X attachment and those for connection to fixed wiring so fixed that when tightening or loosening the clamping means:		**P**
	- the terminal does not loosen		**P**
	- internal wiring is not subjected to stress		**P**
	- clearances and creepage distances are not reduced below the values in 29		**P**
	Compliance checked by inspection and by the test of subclause 8.6 of IEC 60999-1, the torque applied being equal to two-thirds of the torque specified. Nominal diameter of thread (mm); screw category; torque (Nm) ..... :	0,28	**P**
26.4	Terminals for type X attachment, except those with a specially prepared cord, and those for connection to fixed wiring, no special preparation of conductors required, and so constructed or placed that conductors prevented from slipping out		**P**
26.5	Terminals for type X attachment so located or shielded that if a wire of a stranded conductor escapes, no risk of accidental connection to other parts that result in a hazard		**N**/A
	Stranded conductor test, 8 mm insulation removed		**N**/A
	No contact between live parts and accessible metal parts and, for class II constructions, between live parts and metal parts separated from accessible metal parts by supplementary insulation only		**N**/A
26.6	Terminals for type X attachment and for connection to fixed wiring suitable for connection of conductors with required cross-sectional area according to table 13; rated current (A); nominal cross-sectional area (mm^2) ..... :	Terminal block is suitable for connection up to 2,5 mm^2 rated current < 3A	**P**
	Terminals only suitable for a specially prepared cord		**N**/A
26.7	Terminals for type X attachment accessible after removal of a cover or part of the enclosure		**N**/A
26.8	Terminals for the connection to fixed wiring, including the earthing terminal, located close to each other		**P**
26.9	Terminals of the pillar type constructed and located as specified		**P**

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Clause	Requirement - Test	Result - Remark	Verdict
26.10	Terminals with screw clamping and screwless terminals not used for flat twin tinsel cords, unless conductors ends fitted with a device suitable for screw terminals		**N**/A
	Pull test of 5 N to the connection		**N**/A
26.11	For type Y and Z attachment: soldered, welded, crimped and similar connections may be used		**N**/A
	For Class II appliances: the conductor so positioned or fixed that reliance is not placed on soldering, welding or crimping alone		**N**/A
	For Class II appliances: soldering, welding or crimping alone used, barriers provided, clearances and creepage distances satisfactory if the conductor becomes free		**N**/A
27	PROVISION FOR EARTHING		**P**
27.1	Accessible metal parts of Class 0I and I appliances, permanently and reliably connected to an earthing terminal or contact of the appliance inlet		**N**/A
	Earthing terminals not connected to neutral terminal		**N**/A
	Class 0, II and III appliance have no provision for earthing	Class II, III appliances, no provision for earthing.	**P**
	Safety extra-low voltage circuits not earthed, unless protective extra-low voltage circuits		**N**/A
27.2	Clamping means adequately secured against accidental loosening		**N**/A
	Terminals used for the connection of external equipotential bonding conductors allow connection of conductors of 2.5 to 6 mm², and		**N**/A
	do not provide earthing continuity between different parts of the appliance		**N**/A
	Conductors cannot be loosened without the aid of a tool		**N**/A
27.3	For detachable parts that are plugged into another part of the appliance, and having an earth connection, the earth connection made before and separated after current-carrying connections when removing the part		**N**/A
	For appliances with supply cord, current-carrying conductors become taut before earthing conductor, if the cord slips out of the cord anchorage		**N**/A

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Clause	Requirement - Test	Result - Remark	Verdict
27.4	No risk of corrosion resulting from contact between metal of earthing terminal and other metal		**N**/A
	Adequate resistance to corrosion of coated or uncoated parts providing earthing continuity, other than parts of a metal frame or enclosure		**N**/A
	Parts of steel providing earthing continuity provided at the essential areas with an electroplated coating, thickness at least 5 µm		**N**/A
	Adequate protection against rusting of parts of coated or uncoated steel, only intended to provide or transmit contact pressure		**N**/A
	In case of aluminium alloys precautions taken to avoid risk of corrosion		**N**/A
27.5	Low resistance of connection between earthing terminal and earthed metal parts		**N**/A
	This requirement does not apply to connections providing earthing continuity in the protective extra-low voltage circuit, provided that clearances of basic insulation are based on the rated voltage of the appliance		**N**/A
	Resistance not exceeding 0,1 Ω at the specified low-resistance test		**N**/A
27.6	The printed conductors of printed circuit boards not used to provide earthing continuity in hand held appliances		**N**/A
	They may be used in other appliances if:		**N**/A
	- at least two tracks are used with independent soldering points and the appliance complies with requirements of 27.5 for each circuit		**N**/A
	- the material of the printed circuit board complies with IEC 60249-2-4 or IEC 60249-2-5		**N**/A
28	SCREWS AND CONNECTIONS		**P**
28.1	Fixings, electrical connections and connections providing earthing continuity withstand mechanical stresses		**P**
	Screws not of soft metal liable to creep, such as zinc or aluminium	Only metal screws used.	**P**
	Diameter of screws of insulating material min. 3 mm		**N**/A
	Screws of insulating material not used for any electrical connection or connections providing earthing continuity		**N**/A

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Clause	Requirement - Test	Result - Remark	Verdict
	Screws used for electrical connections or connections providing earthing continuity screw into metal		**P**
	Screws not of insulating material if their replacement by a metal screw can impair supplementary or reinforced insulation		**N**/A
	Type X attachment, screws to be removed for replacement of supply cord or for user maintenance, not of insulating material if their replacement by a metal screw can impair basic insulation		**N**/A
	For screws and nuts; test as specified	(see appended table)	**P**
28.2	Electrical connections and connections providing earthing continuity constructed so that contact pressure not transmitted through insulating material liable to shrink or distort, unless shrinkage or distortion compensated	Class II, Class III appliances.	**N**/A
	This requirement does not apply to electrical connections in circuits carrying a current not exceeding 0.5A		**N**/A
28.3	Space-threaded (sheet metal) screws only used for electrical connections if they clamp the parts together		**N**/A
	Thread-cutting (self-tapping) screws only used for electrical connections if they generate a full form standard machine screw threa		**N**/A
	Such screws not used if they are likely to be operated by the user or installer unless the thread is formed by a swaging action		**N**/A
	Thread-cutting and space-threaded screws may be used in connections providing earthing continuity, provided unnecessary to disturb the connection and at least two screws are used for each connection		**N**/A
28.4	Screws and nuts that make mechanical connection secured against loosening if they also make electrical connections or connections providing earthing continuity	Mechanical connection does not serve electrical connection.	**N**/A
	Rivets for electrical connections or connections providing earthing continuity secured against loosening if subjected to torsion		**N**/A

29	CLEARANCES, CREEPAGE DISTANCES AND SOLID INSULATION		**P**
	Clearances, creepage distances and solid insulation withstand electrical stress		**P**

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Clause	Requirement - Test	Result - Remark	Verdict
	For coatings used on printed circuits boards to protect the microenvironment (Type A) or to provide basic insulation (Type B), annex J applies..... :	-	**N**/A
	The microenvironment is pollution degree 1 under Type A coating		**N**/A
	No creepage distance or clearance requirements under Type B coating		**N**/A
29.1	Clearances not less than the values specified in table 16, taking into account the rated impulse voltage for the overvoltage categories of table 15, unless		**P**
	for basic insulation and functional insulation they comply with the implulse voltage test of clause 14		**N**/A
	However, if the construction is affected by wear, distortion, movement of the parts or during assembly, the clearances for rated impulse voltages of 1500V and above are increased by 0,5 mm and the impulse voltage test is not applicable		**N**/A
	Impulse voltage test not applicable:		**P**
	- when the microenvironment is pollution degree 3		**P**
	- for basic insulation of class 0 and class 01 appliances		**N**/A
	Appliances are in overvoltage category II	Considered	**P**
	Clearances less than specified in table 16 not allowed for basic insulation of class 0 and class 0I appliances,		**N**/A
	or if pollution degree 3 is applicable		**P**
	Compliance is checked by inspection and measurements as specified		**P**
29.1.1	Clearances of basic insulation withstand the overvoltages, taking into account the rated impulse voltage		**P**
	Clearance at the terminals of tubular sheathed heating elements may be reduced to 1mm if the microenvironment is pollution degree 1		**N**/A
	Lacquered conductors of windings considered to be bare conductors		**N**/A
29.1.2	Clearances of supplementary insulation not less than those specified for basic insulation in table 16		**P**
29.1.3	Clearances of reinforced insulation not less than those specified for basic insulation in table 16, but using the next higher step for rated impulse voltage		**P**

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Clause	Requirement - Test	Result - Remark	Verdict
29.1.4	For functional insulation, the values of table 16 are applicable, unless		**P**
	the appliance complies with clause 19 with the functional insulation short-circuited		**N**/A
	Lacquered conductors of windings considered to be bare conductors		**N**/A
	However, clearances at crossover points are not measured		**N**/A
	Clearance between surfaces of PTC heating elements may be reduced to 1mm		**N**/A
29.1.5	Appliances having higher working voltage than rated voltage, the voltage used for determining clearances from table 16 is the sum of the rated impulse voltage and the difference between the peak value of the working voltage and the peak value of the rated voltage		**N**/A
	If the secondary winding of a step-down transformer is earthed, or if there is an earthed screen between the primary and secondary windings, clearances of basic insulation on the secondary side not less than those specified in table 16, but using the next lower step for rated impulse voltage		**N**/A
	Circuits supplied with a voltage lower than rated voltage, clearances of functional insulation based on the working voltage used as the rated voltage in table 15		**N**/A
29.2	Creepage distances not less than those appropriate for the working voltage, taking into account the material group and the pollution degree		**P**
	Pollution degree 2 applies, unless		**N**/A
	precautions taken to protect the insulation; pollution degree 1		**N**/A
	insulation subjected to conductive pollution; pollution degree 3		**P**
	Microenvironment is pollution degree 3 unless insulation is enclosed or located that it is unlikely to be exposed to pollution during normal use (IEC 60335-2-80)		**P**
	Compliance is checked by inspection and measurements as specified		**P**
29.2.1	Creepage distances of basic insulation not less than specified in table 17		**P**

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Clause	Requirement - Test	Result - Remark	Verdict
	For pollution degree 1, creepage distance not less than the minimum specified for the clearance in table 16, if the clearance has been checked according to the test of clause 14		**N**/A
29.2.2	Creepage distances of supplementary insulation at least as specified for basic insulation in table 17		**P**
29.2.3	Creepage distances of reinforced insulation at least double as specified for basic insulation in table 17		**P**
29.2.4	Creepage distances of functional insulation not less than specified in table 18		**P**
	Creepage distances may be reduced if the appliance complies with clause 19 with the functional insulation short-circuited		**N**/A
29.3	Supplementary and reinforced insulation having adequate thickness, or a sufficient number of layers, to withstand the electrical stresses		**P**
	Compliance checked by:		**P**
	- measurement, in accordance with 29.3.1, or		**P**
	- an electric strength test in accordance with 29.3.2, or		**N**/A
	- an assessment of the thermal quality of the material combined with an electric strength test, in accordance with 29.3.3		**N**/A
29.3.1	Supplementary insulation having a thickness of at least 1 mm	1,6 mm	**P**
	Reinforced insulation having a thickness of at least 2 mm	2,1 mm	**P**
29.3.2	Each layer of material withstand the electric strength test of 16.3 for supplementary insulation		**N**/A
	Supplementary insulation consisting of at least 2 layers		**N**/A
	Reinforced insulation consisting of at least 3 layers		**N**/A
29.3.3	The insulation is subjected to the dry heat test Bb of IEC 60068-2-2, followed by		**N**/A
	the electric strength test of 16.3		**N**/A
	If the temperature rise during the tests of Clause 19 does not exceed the value specified in Table 3, the test of IEC 60068-2-2 is not carried out		**N**/A
30	RESISTANCE TO HEAT AND FIRE		**P**

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Clause	Requirement - Test	Result - Remark	Verdict
30.1	External parts of non-metallic material,		**P**
	parts supporting live parts, and		**P**
	thermoplastic material providing supplementary or reinforced insulation,		**P**
	sufficiently resistant to heat		**P**
	Ball-pressure test according to IEC 60695-10-2		**P**
	External parts: at 40 °C plus the maximum temperature rise determined during the test of clause 11, or at 75 °C, whichever is the higher; temperature (°C)..... :	Enclosure tested on 75°C	**P**
	Parts supporting live parts: at 40°C plus the maximum temperature rise determined during the test of clause 11, or at 125°C, whichever is the higher; temperature (°C)..... :	Terminal block tested on 125°C	**P**
	Parts of thermoplastic material providing supplementary or reinforced insulation, 25°C plus the maximum temperature rise determined during clause 19, if higher; temperature (°C)..... :	Thermoplastic material held in place the motor 80°C	**P**
30.2	Relevant parts of non-metallic material adequately resistant to ignition and spread of fire		**P**
30.2.1	Glow-wire test of IEC 60695-2-11 at 550 °C, unless	Enclosure.	**P**
	the material is classified at least HB40 according to IEC 60695-11-10		**N**/A
	Parts for which the glow-wire test cannot be carried out meet the requirements in ISO9772 for category HBF material		**N**/A
30.2.3	Appliances operated while unattended, tested as specified in 30.2.3.1 and 30.2.3.2		**P**
	Test not applicable to conditions as specified		**P**
30.2.3.1	Parts of insulating material supporting connections carrying a current exceeding 0.2A during normal operation, and	12 V	**P**
	parts of insulating material within a distance of 3mm,		**N**/A
	having a glow-wire flammability index of at least 850°C according to IEC 60695-2-12	Approved components (12 V)	**P**
30.2.3.2	Parts of insulating material supporting current-carrying connections, and		**P**
	parts of insulating material within a distance of 3mm,		**N**/A
	subjected to glow-wire test of IEC 60695-2-11		**P**

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Clause	Requirement - Test	Result - Remark	Verdict
	Test not carried out on material having a glow-wire ignition temperature according to IEC 60695-2-13 as specified		**N**/A
	Glow-wire test of IEC 60695-2-11, the temperature being:		**P**
	-775°C, for connections carrying a current exceeding 0,2A during normal operation	Approved components (12 V)	**P**
	-650°C, for other connections	Approved components	**P**
	Parts that during the test produce a flame persisting longer than 2 s, tested as specified		**N**/A
	If a flame persists longer than 2 s during the test, parts above the connection, as specified, subjected to the needle-flame test of annex E, unless		**N**/A
	the material is classified as V-0 or V-1 according to IEC 60695-11-10		**N**/A
30.2.4	Base material of printed circuit boards subjected to needle-flame test of annex E		**N**/A
	Test not applicable to conditions as specified		**N**/A
31	RESISTANCE TO RUSTING		**P**
	Relevant ferrous parts adequately protected against rusting		**P**
32	RADIATION, TOXICITY AND SIMILAR HAZARDS		**N**/A
	Appliance does not emit harmful radiation		**N**/A
	Appliance does not present a toxic or similar hazard		**N**/A
A	ANNEX A (INFORMATIVE) ROUTINE TESTS		**N**/A
	Description of routine tests to be carried out by the manufacturer		**N**/A
B	ANNEX B (NORMATIVE) APPLIANCES POWERED BY RECHARGEABLE BATTERIES		**N**/A
	The following modifications to this standard are applicable for appliances powered by batteries that are recharged in the appliance	No batteries.	**N**/A
	This annex does not apply to battery chargers		**N**/A

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Clause	Requirement - Test	Result - Remark	Verdict
3.1.9	Appliance operated under the following conditions:		**N**/A
	-the appliance, supplied by its fully charged battery, operated as specified in relevant part 2		**N**/A
	-the battery is charged, the battery being initially discharged to such an extent that the appliance cannot operate		**N**/A
	-if possible, the appliance is supplied from the supply mains through its battery charger, the battery being initially discharged to such an extent that the appliance cannot operate. The appliance is operated as specified in relevant part 2		**N**/A
	If the appliance incorporates inductive coupling between two parts that are detachable from each other, the appliance is supplied from the supply mains with the detachable part removed		**N**/A
3.6.2	Part to be removed in order to discard the battery is not considered to be detachable		**N**/A
5.101	Appliances supplied from the supply mains tested as specified for motor-operated appliances		**N**/A
7.1	Battery compartment for batteries intended to be replaced by the user, marked with battery voltage and polarity of the terminals		**N**/A
7.12	The instructions for appliances incorporating batteries intended to be replaced by the user includes required information		**N**/A
	Details about how to remove batteries containing materials hazardous to the environment given		**N**/A
7.15	Markings placed on the part of the appliance connected to the supply mains		**N**/A
8.2	Appliances having batteries that according to the instruction may be replaced by the user need only have basic insulation between live parts and the inner surface of the battery compartment		**N**/A
	If the appliance can be operated without batteries, double or reinforced insulation required		**N**/A
11.7	The battery is charged for the period described		**N**/A
19.1	Appliances subjected to tests of 19.101, 19.102 and 19.103		**N**/A
19.101	Appliances supplied at rated voltage for 168 h, the battery being continually charged		**N**/A
19.102	Short-circuiting of the terminals of the battery, being fully charged, for appliances having batteries that can be removed without the aid of a tool		**N**/A

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Clause	Requirement - Test	Result - Remark	Verdict
19.103	Appliances having batteries replaceable by the user supplied at rated voltage under normal operation with the battery removed or in any position allowed by the construction		**N**/A
21.101	Appliances having pins for insertion into socket-outlets have adequate mechanical strength, checked according to procedure 2 of IEC 68-2-32		**N**/A
	Part of the appliance incorporating the pins subjected to the free fall test, procedure 2, of IEC 60068-2-32, the number of falls being:		**N**/A
	- 100, the mass of part does not exceed 250 g		**N**/A
	- 50, the mass of part exceeds 250 g		**N**/A
	After the test, the requirements of 8.1, 15.1.1, 16.3 and clause 29 are met		**N**/A
22.3	Appliances having pins for insertion into socket-outlets tested as fully assembled as possible		**N**/A
25.13	An additional lining or bushing not required for interconnection cords operating at safety extra-low voltage		**N**/A
30.2	For parts of the appliance connected to the supply mains during the charging period, 30.2.3 applies		**N**/A
	For other parts, 30.2.2 applies		**N**/A
C	ANNEX C (NORMATIVE) AGEING TEST ON MOTORS		**N**/A
	Tests, as described, carried out when doubt with regard to the temperature classification of the insulation of a motor winding		**N**/A
D	ANNEX D (NORMATIVE) THERMAL MOTOR PROTECTORS		**N**/A
	Applicable to appliances having motors that incorporate thermal motor protectors		**N**/A
E	ANNEX E (NORMATIVE) NEEDLE-FLAME TEST		**N**/A
	Needle-flame test carried out in accordance with IEC 60695-2-2, with the following modifications:		**N**/A
5	Severities		**N**/A
	The duration of application of the test flame is 30 s ± 1 s		**N**/A

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Clause	Requirement - Test	Result - Remark	Verdict
8	Test procedure		**N**/A
8.2	The specimen so arranged that the flame can be applied to a vertical or horizontal edge as shown in the examples of figure 1		**N**/A
8.4	The first paragraph does not apply		**N**/A
	If possible, the flame is applied at least 10 mm from a corner		**N**/A
8.5	The test is carried out on one specimen		**N**/A
	If the specimen does not withstand the test, the test may be repeated on two further specimens, both withstanding the test		**N**/A
10	Evaluation of test results		**N**/A
	The duration of burning not exceeding 30 s		**N**/A
	However, for printed circuit boards, the duration of burning not exceeding 15 s		**N**/A
F	ANNEX F (NORMATIVE) CAPACITORS		**N**/A
	Capacitors likely to be permanently subjected to the supply voltage, and used for radio interference suppression or voltage dividing, comply with the following clauses of IEC 60384-14, with the following modifications:		**N**/A
1.5	Terminology		**N**/A
1.5.3	Class X capacitors tested according to subclass X2		**N**/A
1.5.4	This subclause is applicable		**N**/A
1.6	Marking		**N**/A
	Items a) and b) are applicable		**N**/A
3.4	Approval testing		**N**/A
3.4.3.2	Table II is applicable as described		**N**/A
4.1	Visual examination and check of dimensions		**N**/A
	This subclause is applicable		**N**/A
4.2	Electrical tests		**N**/A
4.2.1	This subclause is applicable		**N**/A
4.2.5	This subclause is applicable		**N**/A
4.2.5.2	Only table IX is applicable		**N**/A
	Values for test A apply		**N**/A

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Clause	Requirement - Test	Result - Remark	Verdict
	However, for capacitors in heating appliances the values for test B or C apply		**N**/A
4.12	Damp heat, steady state		**N**/A
	This subclause is applicable		**N**/A
	Only insulation resistance and voltage proof are checked		**N**/A
4.13	Impulse voltage		**N**/A
	This subclause is applicable		**N**/A
4.14	Endurance		**N**/A
	Subclauses 4.14.1, 4.14.3, 4.14.4 and 4.14.7 applicable		**N**/A
4.14.7	Only insulation resistance and voltage proof are checked		**N**/A
	Visual examination, no visible damage		**N**/A
4.17	Passive flammability test		**N**/A
	This subclause is applicable		**N**/A
4.18	Active flammability test		**N**/A
	This subclause is applicable		**N**/A
G	ANNEX G (NORMATIVE) SAFETY ISOLATING TRANSFORMERS		**N**/A
	The following modifications to this standard are applicable for safety isolating transformers:	No transformers.	**N**/A
7	Marking and instructions		**N**/A
7.1	Transformers for specific use marked with:		**N**/A
	-name, trademark or identification mark of the manufacturer or responsible vendor		**N**/A
	-model or type reference		**N**/A
17	Overload protection of transformers and associated circuits		**N**/A
	Fail-safe transformers comply with subclause 15.5 of IEC 61558-1		**N**/A
22	Construction		**N**/A
	Subclauses 19.1 and 19.1.2 of IEC 61558-2-6 are applicable		**N**/A
29	Clearances, creepage distances and solid insulation		**N**/A
29.1, 29.2 and 29.3	The distances specified in items 2a, 2c and 3 in table 13 of IEC 61558-1 apply		**N**/A

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Clause	Requirement - Test	Result - Remark	Verdict
H	ANNEX H (NORMATIVE) SWITCHES		**N**/A
	Switches comply with the following clauses of IEC 61058-1, as modified:		**N**/A
	-The tests of IEC 61058-1 carried out under the conditions occurring in the appliance		**N**/A
	-Before being tested, switches are operated 20 times without load		**N**/A
8	Marking and documentation		**N**/A
	Switches are not required to be marked		**N**/A
	However, switches that can be tested separately from the appliance marked with the manufacturer's name or trade mark and the type reference		**N**/A
13	Mechanism		**N**/A
	The tests may be carried out on a separate sample		**N**/A
15	Insulation resistance and dielectric strength		**N**/A
15.1	Not applicable		**N**/A
15.2	Not applicable		**N**/A
15.3	Applicable for full disconnection and micro-disconnection		**N**/A
17	Endurance		**N**/A
	Compliance is checked on three separate appliances or switches		**N**/A
	For 17.2.4.4, the number of cycles is 10 000, unless otherwise specified in 24.1.3 of the relevant part 2 of IEC 60335		**N**/A
	Switches for operation under no load and which can be operated only by a tool and switches operated by hand that are interlocked so that they cannot be operated under load, are not subjected to the tests		**N**/A
	Subclauses 17.2.2 and 17.2.5.2 not applicable		**N**/A
	The ambient temperature during the test is that occurring in the appliance during the test of Clause 11 in IEC 60335-1		**N**/A
	Temperature rise of the terminals not more than 30 K above the temperature rise measured in clause 11 of IEC 60335-1		**N**/A
20	Clearances, creepage distances, solid insulation and coatings of rigid printed board assemblies		**N**/A

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Clause	Requirement - Test	Result - Remark	Verdict
	This clause is applicable to clearances and creepage distances for functional insulation, across full disconnection and micro-disconnection, as stated in table 24		**N**/A
I	ANNEX I (NORMATIVE) MOTORS HAVING BASIC INSULATION THAT IS INADEQUATE FOR THE RATED VOLTAGE OF THE APPLIANCE		**N**/A
	The following modifications to this standard are applicable for motors having basic insulation that is inadequate for the rated voltage of the appliance:		**N**/A
8	Protection against access to live parts		**N**/A
8.1	Metal parts of the motor are considered to be bare live parts		**N**/A
11	Heating		**N**/A
11.3	Temperature rise of the body of the motor is determined instead of the temperature rise of the windings		**N**/A
11.8	Temperature rise of the body of the motor, where in contact with insulating material, not exceeding values in table 3 for the relevant insulating material		**N**/A
16	Leakage current and electric strength		**N**/A
16.3	Insulation between live parts of the motor and its other metal parts not subjected to the test		**N**/A
19	Abnormal operation		**N**/A
19.1	The tests of 19.7 to 19.9 not carried out		**N**/A
19.101	Appliance operated at rated voltage with each of the following fault conditions:		**N**/A
	- short circuit of the terminals of the motor, including any capacitor incorporated in the motor circuit		**N**/A
	- short circuit of each diode of the rectifier		**N**/A
	- open circuit of the supply to the motor		**N**/A
	- open circuit of any parallel resistor, the motor being in operation		**N**/A
	Only one fault simulated at a time, the tests carried out consecutively		**N**/A
22	Construction		**N**/A
22.101	For class I appliances incorporating a motor supplied by a rectifier circuit, the d.c. circuit being insulated from accessible parts of the appliance by double or reinforced insulation		**N**/A

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Clause	Requirement - Test	Result - Remark	Verdict
	Compliance checked by the tests specified for double and reinforced insulation		**N**/A
J	ANNEX J (NORMATIVE) COATED PRINTED CIRCUIT BOARDS		**N**/A
	Testing of protective coatings of printed circuit boards carried out in accordance with IEC 60664-3 with the following modifications:	No coated PCB.	**N**/A
6.6	Climatic sequence		**N**/A
	When production samples are used, three samples of the printed circuit board are tested		**N**/A
6.6.1	Cold		**N**/A
	The test is carried out at -25°C		**N**/A
6.6.3	Rapid change of temperature		**N**/A
	Severity 1 is specified		**N**/A
6.8.6	Partial discharge extinction voltage		**N**/A
	Type A coatings not subjected to a partial discharge test		**N**/A
6.9	Additional tests		**N**/A
	This subclause is not applicable		**N**/A
K	ANNEX K (NORMATIVE) OVERVOLTAGE CATEGORIES		**P**
	The information on overvoltage categories is extracted from IEC 60664-1		**P**
	Overvoltage category is a numeral defining a transient overvoltage condition		**P**
	Equipment of overvoltage category IV is for use at the origin of the installation		**N**/A
	Equipment of overvoltage category III is equipment in fixed installations and for cases where the reliability and the availability of the equipment is subject to special requirements		**N**/A
	Equipment of overvoltage category II is energy consuming equipment to be supplied from the fixed installation	According to the clause 29.1.	**P**
	If such equipment is subjected to special requirements with regard to reliability and availability, overvoltage category III applies		**N**/A

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Clause	Requirement - Test	Result - Remark	Verdict
	Equipment of overvoltage category I is equipment for connection to circuits in which measures are taken to limit transient overvoltages to an appropriate low level		**N**/A
L	ANNEX L (INFORMATIVE) GUIDANCE FOR THE MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES		**P**
	Sequences for the determination of clearances and creepage distances		**P**
M	ANNEX M (NORMATIVE) POLLUTION DEGREE		**P**
	The information on pollution degrees is extracted from IEC 60664-1		**P**
	Pollution		**P**
	The microenvironment determines the effect of pollution on the insulation, taking into account the microenvironment		**P**
	Means may be provided to reduce pollution at the insulation by effective enclosures or similar		**P**
	Minimum clearances specified where pollution may be present in the microenvironment		**P**
	Degrees of pollution in the microenvironment		**P**
	For evaluating creepage distances, the following degrees of pollution in the microenvironment are established:		**P**
	- pollution degree 1: no pollution or only dry, non-conductive pollution occurs. The pollution has no influence		**N**/A
	- pollution degree 2: only non-conductive pollution occurs, except that occasionally a temporary conductivity caused by condensation is to be expected		**N**/A
	- pollution degree 3: conductive pollution occurs or dry non-conductive pollution occurs that becomes conductive due to condensation that is to be expected	According clause 29.2 of IEC 60335-2-80	**P**
	- pollution degree 4: the pollution generates persistent conductivity caused by conductive dust or by rain or snow		**N**/A
N	ANNEX N (NORMATIVE) PROOF TRACKING TEST		**N**/A

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Clause	Requirement - Test	Result - Remark	Verdict
	The proof tracking test is carried out in accordance with IEC 60112 with the following modifications:		**N**/A
7	Test apparatus		**N**/A
7.3	Test solutions		**N**/A
	Test solution A is used		**N**/A
10	Determination of proof tracking index (PTI)		**N**/A
10.1	Procedure		**N**/A
	The proof voltage is 100 V, 175 V, 400 V or 600 V .. :		**N**/A
	The last paragraph of Clause 3 applies		**N**/A
	The test is carried out on five specimens		**N**/A
	In case of doubt, additional test with proof voltage reduced by 25V, the number of drops increased to 100		**N**/A
10.2	Report		**N**/A
	The report stating if the PTI value was based on a test using 100 drops with a test voltage of (PTI-25) V		**N**/A
O	ANNEX O (INFORMATIVE) SELECTION AND SEQUENCE OF THE TESTS OF CLAUSE 30		**P**
	Description of tests for determination of resistance to heat and fire		**P**
P	ANNEX P (INFORMATIVE) GUIDANCE FOR THE APPLICATION OF THIS STANDARD TO APPLIANCES USED IN WARM DAMP EQUABLE CLIMATES		**N**/A
	Modifications applicable for class 0 and 01 appliances having a rated voltage exceeding 150V, intended to be used in countries having a warm damp equable climate and that are marked WDaE		**N**/A
	Modifications may also be applied to class 1 appliances having a rated voltage exceeding 150V, intended to be used in countries having a warm damp equable climate and that are marked WDaE, if liable to be connected to a supply mains that excludes the protective earthing conductor		**N**/A
5	General conditions for the tests		**N**/A
5.7	The ambient temperature for the tests of Clauses 11 and 13 is 40 $^{+3}/_{0}$		**N**/A
7	Marking and instructions		**N**/A
7.1	The appliance marked with the letters WDaE		**N**/A

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Clause	Requirement - Test	Result - Remark	Verdict
7.12	The instructions state that the appliance is to be supplied through a RCD having a rated residual operating current not exceeding 30 mA		**N**/A
	The instructions state that the appliance is considered to be suitable for use in countries having a warm damp equable climate, but may also be used in other countries		**N**/A
11	Heating		**N**/A
11.8	The values of Table 3 are reduced by 15 K		**N**/A
13	Leakage current and electric strength at operating temperature		**N**/A
13.2	The leakage current for class I appliances not exceeding 0,5 mA		**N**/A
15	Moisture resistance		**N**/A
15.3	The value of t is 37 °C		**N**/A
16	Leakage current and electric strength		**N**/A
16.2	The leakage current for class I appliances not exceeding 0,5 mA		**N**/A
19	Abnormal operation		**N**/A
19.13	The leakage current test of 16.2 is applied in addition to the electric strength test of 16.3		**N**/A
Q	ANNEX Q (INFORMATIVE) SEQUENCE OF TESTS FOR THE EVALUATION OF ELECTRONIC CIRCUITS		**N**/A
	Description of tests for appliances incorporating electronic circuits		**N**/A
R	ANNEX R (NORMATIVE) SOFTWARE EVALUATION		**N**/A
	Software evaluated in accordance with the following clauses of Annex H of IEC 60730-1, as modified		**N**/A
H.2	Definitions		**N**/A
	Only definitions H.2.16 to H.2.20 applicable		**N**/A
H.7	Information		**N**/A
	Only footnotes 12) to 18) of Table 7.2, as modified, applicable		**N**/A
H.11.12	Controls using software		**N**/A
	All the subclauses of H.11.12, as modified, except H.11.12.6 and H.11.12.6.1, applicable		**N**/A
H.11.12.7	Delete text		**N**/A

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Clause	Requirement - Test	Result - Remark	Verdict
H.11.12.7.1	For appliances using software class C having a single channel with self-test and monitoring structure, the manufacturer provides the measures necessary to address the fault/errors in safety related segments and data		**N**/A
H.11.12.8	Software fault/error detection occurs before compliance with 19.13 of IEC 60335-1 is impaired		**N**/A
H.11.12.8.1	Replace text		**N**/A
H.11.12.13	Software and safety related hardware under its control initializes and terminates before compliance with 19.13 of IEC 60335-1 is impaired		**N**/A

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Clause	Requirement - Test	Result - Remark	Verdict

6	**CLASSIFICATION**		**P**
6.1	Protection against electric shock: Class I, II, III .....:	Class II, III	**P**

7	**MARKING AND INSTRUCTIONS**		**P**
7.1	Rated voltage or voltage range (V) .....:	220-240 V; 12 V	**P**
	Single-phase appliances: 230 V covered	Covered, see previous line.	**P**
	Multi-phase appliances: 400 V covered		**N**/A

25	**SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CORDS**		**N**/A
25.6	Plugs fitted with only one flexible cord	No power supply cord provided.	**N**/A
	Supply cords of single-phase portable appliances having a rated current not exceeding 16 A shall be fitted with a plug complying with the following standard sheets of IEC 60083:1975:		**N**/A
	- for Class I appliances: Standard Sheet C2b, C3B or C4;		**N**/A
	- for Class II appliances: Standard Sheet C5 or C6		**N**/A
25.7	Supply cord not lighter than:		**N**/A
	- ordinary polychloroprene sheathed flexible cord (code designation 60245 IEC 57)		**N**/A
	When supply cords having high flexibility are used, they shall not be lighter than		**N**/A
	- rubber insulated and sheathed cord (code designation 60245 IEC 86);		**N**/A
	- rubber insulated, crosslinked PVC sheathed cord (code designation 60245 IEC 87);		**N**/A
	- crosslinked PVC insulated and sheathed cord (code designation 60245 IEC 88).		**N**/A

ANNEX EMF			
	The Tested product also complies to the requirements of EN 50366:2003 + A1:2006		—
	Limit ……100% (VENTS 125 VKOk turbo)	Measured max. :0,319….%	**P**
	The appliance operated in continuous mode		

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Clause	Requirement - Test	Result - Remark	Verdict

10.1	TABLE: Power input deviation				**P**
Input deviation of/at:	P rated (W)	P measured (W)	Dp (W)	Required dP (W)	Remark
125 VKOk 12 turbo	20	18.3	- 1.7	+ 4	See below.
125 VKO	16	15	-1	+ 3,2	See below.
					See below.
					See below.
Remark: Value of deviations was measured at 12 V and 240 V.					

10.2	TABLE: Current deviation				**N**/A
Current deviation of/at:	I rated (A)	I measured (A)	dI	Required dI	Remark
-					

11.8	TABLE: Heating test, thermocouples		**P**
	Test voltage (V) .....:	254.4; 12,72	—
	Ambient .....:	45 °C	—

Thermocouple locations	ΔT (K)	Max. ΔT (K)
125 VKOk 12 turbo		
Terminal block	6,2	40
Supply cord of the motor	4,5	30
Enclosure	18	According to clause 30.1
125 VKO		
Terminal block	7	40
Supply cord of the motor	6	30
Enclosure	19	According to clause 30.1

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Clause	Requirement - Test	Result - Remark	Verdict

Note(s):

With a rated maximum ambient temperature of 45 °C, the max. temperature rise is calculated as follows:

Winding components:

- Class B (resistance method) → ΔTmax = 95K - (45-25) K = 75K

Surface of components:

- Terminal block → ΔTmax = 60- (45-25) K = 40K
- Internal wire → ΔTmax = 50- (45-25) K = 30K

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Clause	Requirement - Test	Result - Remark	Verdict

11.8	TABLE: Heating test, resistance method		**P**
	Test voltage (V) .....:	254.4; 12,72	—
	Ambient, t_1 .....:	45 °C	—
	Ambient, t_2 .....:	45 °C	—

Temperature rise of winding	R_1 (Ω)	R_2 (Ω)	dT (K)	Max. dT (K)	Insulation class
125 VKOk 12 turbo	1,18	1,38	47,4	75	130
125 VKO	560	626	33	75	130

13.2	TABLE: Leakage current		**P**
	Heating appliances: 1.15 x rated input .....:	-	—
	Motor-operated and combined appliances: 1.06 x rated voltage.....:	254.4V; 12,72 V	—

Leakage current between:	I (mA)	Max. allowed I (mA)
Live part and enclosure wrapped with foil:	-	-
125 VKOk 12 turbo	0,01	0.5
125 VKO	0,1	0.25

13.3	TABLE: Electric strength		**P**
Test voltage applied between:		Voltage (V)	Breakdown (Yes/No)
125 VKOk 12 turbo			
Live part and motor surface		500	No
Live part and enclosure wrapped with foil		500	No
125 VKO			
Live part and motor surface		1000	No
Motor surface and enclosure wrapped with foil		1750	No
Live part and enclosure wrapped with foil		3000	No

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Clause	Requirement - Test	Result - Remark	Verdict

14	TABLE: Transient overvoltages					**N**
Clearance between:		Cl (mm)	Required Cl (mm)	Rated impulse voltage (V)	Impulse test voltage (V)	Flashover (Yes/No)
-						

16.2	TABLE: Leakage current		**P**
	Single phase appliances: 1.06 x rated voltage.....:	254.4 V; 12,72 V	—
	Three phase appliances 1.06 x rated voltage divided by √3: .....:	-	—

Leakage current between:	I (mA)	Max. allowed I (mA)
Live and enclosure wrapped with foil:	-	-
125 VKOk 12 turbo	0,01	0.5
125 VKO	0,12	0.25

16.3	TABLE: Electric strength		**P**
Test voltage applied between:		Voltage (V)	Breakdown (Yes/No)
125 VKOk 12 turbo			
Live and motor surface		500	No
Live and enclosure wrapped with foil		500	No
125 VKO			
Live and motor surface		1250	No
Motor surface and enclosure wrapped with foil		1750	No
Live and enclosure wrapped with foil		3000	No

17	TABLE: Overload protection, temperature rise		**N**/A
Temperature rise of part/at:		dT (K)	Max. dT (K)
-			

19.7	TABLE: Abnormal operation, locked rotor/moving parts		**P**
	Test voltage (V) .....:	240 V; 12,72 V	—
	Ambient, t_1 (°C) .....:	25 °C	—

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Clause	Requirement - Test	Result - Remark	Verdict

	Ambient, t_2 (°C) ..... :	25 °C				—
Temperature of winding		R_1 (Ω)	R_2 (Ω)	dT (K)	T (°C)	Max. T (°C)
Thermal cut-out operated		-	-	-	-	-
-		-	-	-	-	-

19.9	TABLE: Abnormal operation, running overload					**N**/A
	Test voltage (V) ..... :	-				—
	Ambient, t_1 (°C) ..... :	-				—
	Ambient, t_2 (°C) ..... :	-				—
Temperature of winding		R_1 (Ω)	R_2 (Ω)	dT (K)	T (°C)	Max. T (°C)
-						

19.13	TABLE: Abnormal operation, temperature rises			**P**
Thermocouple locations			dT (K)	Max. dT (K)
125 VKOk 12 turbo	enclosure		21	according to clause 30.1
125 VKO	enclosure		29	according to clause 30.1

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Clause	Requirement - Test	Result - Remark	Verdict

24.1	TABLE: Components				**P**
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity
For 12 V appliances:					
Terminal	Simet	210 LTA 12-2.5	380V, 2.5mm^2 T85	EN 60998-2-1	BBJ*
Switch	VLM S.p.A.	200	AC 250V, 2A, T125, cord-operated	EN 61058-1	IMQ*
Motor	Hua Ning	YJ 5816, 5816	AC 12 V, 50Hz	EN 60335-1	Tested in the equipment
Thermal link	Aupo Electronics Ltd.	P7	AC 250V, 2A T_f150ºC	EN 60691	VDE*
Motor	Johnson	SP 5812, 5816, 5820	12 V, 50 Hz	EN 60335-1	Tested in the equipment
Thermal link	Matsushita	109	AC 250V, 2A T_f150ºC	EN 60691	VDE*
Electric actuator	ELTEK	100331	12 V AC/DC	EN 60730-1 EN 60730-2-14	ENEC
For 220 – 240 V appliances:					
Terminal	SIMET	210 LTA 12-2.5	380 V, 2,5 mm^2	EN 60998	BBJ*
Motor	JOHNSON	SP-5820	220-240 V/50 Hz 20 W	EN 60335-1	VDE
Thermal link	Matsushita	N 109	AC 250, 2 A, 114 ℃	EN 60691	VDE
(alternate)	Matsushita	N 124	AC 250, 2 A, 130 ℃	EN 60691	VDE
(alternate)	Matsushita	N 126	AC 250, 2 A, 133 ℃	EN 60691	VDE
Motor	JOHNSON	SP-5816, 5812	220-240 V/50 Hz	EN 60335-1	VDE
Thermal link	Matsushita	EYP2BN109	114 ℃	EN 60691	VDE
[1)] An asterisk indicates a mark which assures the agreed level of surveillance					

IEC 60335-2-80			
Clause	Requirement - Test	Result - Remark	Verdict

28.1	TABLE: Threaded part torque test		**P**
Threaded part identification	Diameter of thread (mm)	Column number (I, II, or III)	Applied torque (Nm)
Motor holder screw	3.8	II	1.2
Cable anchorage	2.7	II	0.4

29.1	TABLE: Clearances					**P**
	Overvoltage category..... :	II				**P**
		Type of insulation:				
Rated impulse voltage (V):	Min. cl (mm)	Basic	Functional	Supplementary	Reinforced	Verdict / Remark
330	0,5					**N**/A
500	0,5	> 6				**P**
800	0,5					**N**/A
1 500	1,0					**N**/A
2 500	**2,0**	5		5		**P** / between winding and motor body; between motor body and accessible part of enclosure
4 000	**3,5**				8	**P** / between live and accessible part of enclosure
6 000	6,0					**N**/A
8 000	8,5					**N**/A
10 000	11,5					**N**/A

29.2	TABLE: Creepage distances, basic, supplementary and reinforced insulation										**P**
Working voltage (V)	Creepage distance (mm) Pollution degree										
	1	2			3			Type of insulation			
		Material group			Material group						
		I	II	IIIa/IIIb	I	II	IIIa/IIIb	B*)	S*)	R*)	Verdict
≤50	0,2	0,6	0,9	1,2	1,5	1,7	**1,9**		—	—	**P**(1)
≤50	0,2	0,6	0,9	1,2	1,5	1,7	1,9	—		—	**N**/A

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Clause	Requirement - Test	Result - Remark	Verdict

≤50	0,4	1,2	1,8	2,4	3,0	3,4	**3,8**	—	—		**P**(2)
>50 and ≤125	0,3	0,8	1,1	1,5	1,9	2,1	2,4		—	—	**N**/A
>50 and ≤125	0,3	0,8	1,1	1,5	1,9	2,1	2,4	—		—	**N**/A
>50 and ≤125	0,6	1,6	2,2	3,0	3,8	4,2	4,8	—	—		**N**/A
>125 and ≤250	0,6	1,3	1,8	**2,5**	3,2	3,6	4,0	9	—	—	**P**(1)
>125 and ≤250	0,6	1,3	1,8	**2,5**	3,2	3,6	4,0	—	9	—	**P**(2)
>125 and ≤250	1,2	2,6	3,6	**5,0**	6,4	7,2	8,0	—	—	12	**P**(3)
>250 and ≤400	1,0	2,0	2,8	4,0	5,0	5,6	6,3		—	—	**N**/A
>250 and ≤400	1,0	2,0	2,8	4,0	5,0	5,6	6,3	—		—	**N**/A
>250 and ≤400	2,0	4,0	5,6	8,0	10,0	11,2	12,6	—	—		**N**/A
>400 and ≤500	1,3	2,5	3,6	5,0	6,3	7,1	8,0		—	—	**N**/A
>400 and ≤500	1,3	2,5	3,6	5,0	6,3	7,1	8,0	—		—	**N**/A
>400 and ≤500	2,6	5,0	7,2	10,0	12,6	14,2	16,0	—	—		**N**/A
>500 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0		—	—	**N**/A
>500 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	—		—	**N**/A
>500 and ≤800	3,6	6,4	9,0	12,6	16,0	18,0	20,0	—	—		**N**/A
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5		—	—	**N**/A
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	—		—	**N**/A
>800 and ≤1000	4,8	8,0	11,2	16,0	20,0	22,0	25,0	—	—		**N**/A
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0		—	—	**N**/A
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0	—		—	**N**/A
>1000 and ≤1250	6,4	10,0	14,2	20,0	25,0	28,0	32,0	—	—		**N**/A
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0		—	—	**N**/A
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0	—		—	**N**/A
>1250 and ≤1600	8,4	12,6	18,0	25,0	32,0	36,0	40,0	—	—		**N**/A
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0		—	—	**N**/A
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0	—		—	**N**/A
>1600 and ≤2000	11,2	16,0	22,0	32,0	40,0	44,0	50,0	—	—		**N**/A
>2000 and ≤2500	7,5	10,0	14,0	20,0	25, 0	28,0	32,0		—	—	**N**/A
>2000 and ≤2500	7,5	10,0	14,0	20,0	25, 0	28,0	32,0	—		—	**N**/A
>2000 and ≤2500	15,0	20,0	28,0	40,0	50,0	56,0	64,0	—	—		**N**/A

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Clause	Requirement - Test	Result - Remark	Verdict

>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0		—	—	**N**/A
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0	—		—	**N**/A
>2500 and ≤3200	20,0	25,0	36,0	50,0	64,0	72,0	80,0	—	—		**N**/A
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0		—	—	**N**/A
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0	—		—	**N**/A
>3200 and ≤4000	25,0	32,0	44,0	64,0	80,0	90,0	100,0	—	—		**N**/A
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0		—	—	**N**/A
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0	—		—	**N**/A
>4000 and ≤5000	32,0	40,0	56,0	80,0	100,0	112,0	126,0	—	—		**N**/A
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0		—	—	**N**/A
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0	—		—	**N**/A
>5000 and ≤6300	40,0	50,0	72,0	100,0	126,0	142,0	160,0	—	—		**N**/A
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0		—	—	**N**/A
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0	—		—	**N**/A
>6300 and ≤8000	50,0	64,0	90,0	126,0	160,0	180,0	200,0	—	—		**N**/A
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0		—	—	**N**/A
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0	—		—	**N**/A
>8000 and ≤10000	64,0	80,0	112,0	160,0	200,0	220,0	250,0	—	—		**N**/A
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0		—	—	**N**/A
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0	—		—	**N**/A
>10000 and ≤12500	80,0	100,0	142,0	200,0	250,0	280,0	320,0	—	—		**N**/A

*), B=Basic, S=Supplementary and R=Reinforced

(1): Between winding and motor body
(2): between motor body and accessible part of enclosure
(3): Between switch terminal and accessible part of enclosure

29.2	TABLE: Creepage distances, functional insulation							**P**
Working voltage (V)	Creepage distance (mm) Pollution degree							
	1	2			3			
		Material group			Material group			
		I	II	IIIa/IIIb	I	II	IIIa/IIIb	Verdict / Remark

IEC 60335-2-80			
Clause	Requirement - Test	Result - Remark	Verdict

≤50	0,2	0,6	0,8	1,1	1,4	1,6	**1,8**	**P**
>50 and ≤125	0,3	0,7	1,0	1,4	1,8	2,0	2,2	**N**/A
>125 and ≤250	0,4	1,0	1,4	**2,0**	2,5	2,8	3,2	**P**
>250 and ≤400	0,8	1,6	2,2	3,2	4,0	4,5	5,0	**N**/A
>400 and ≤500	1,0	2,0	2,8	4,0	5,0	5,6	6,3	**N**/A
>500 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	**N**/A
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	**N**/A
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0	**N**/A
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0	**N**/A
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0	**N**/A
>2000 and ≤2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0	**N**/A
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0	**N**/A
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0	**N**/A
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0	**N**/A
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0	**N**/A
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0	**N**/A
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0	**N**/A
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0	**N**/A

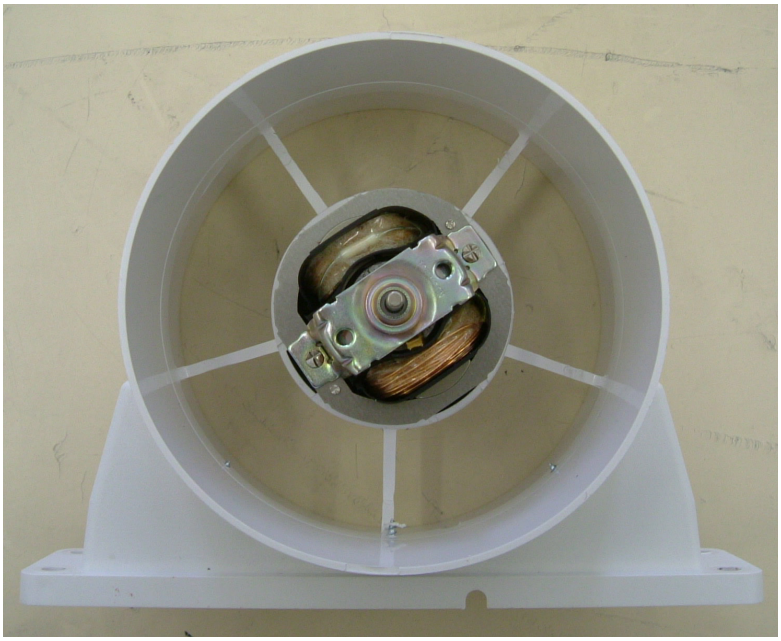
30.1	TABLE: Ball pressure			**P**
Part		Test temperature (°C)	Impression diameter (mm)	Allowed impression diameter (mm)
125 VKOk 12 turbo				
Enclosure		75	0.8	2
Thermoplastic material held in place the motor		80	1.0	2
Terminal		125	0.4	2
125 VKO				
Enclosure		75	0.8	2
Thermoplastic material held in place the motor		80	1.0	2
Terminal		125	0,4	2

Pictures of the appliances

125 VKOk 12 turbo front

125 VKOk 12 turbo back

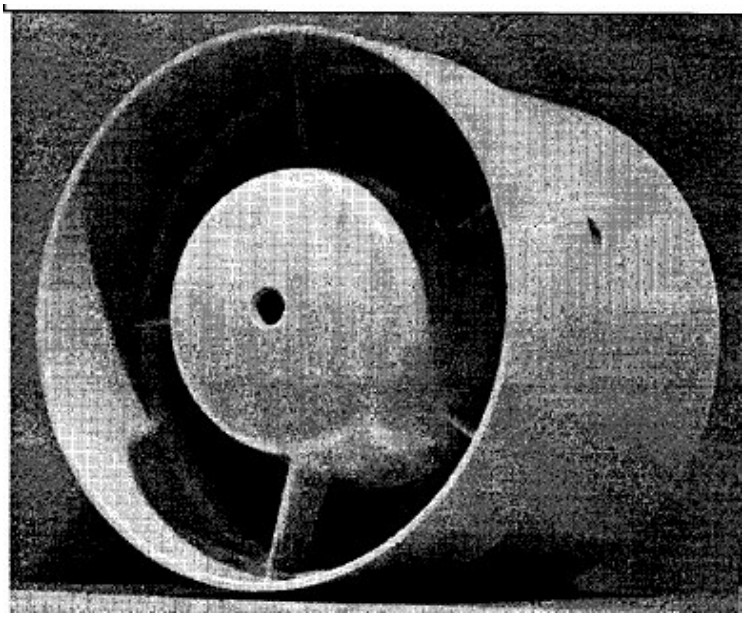
Pictures of the appliances



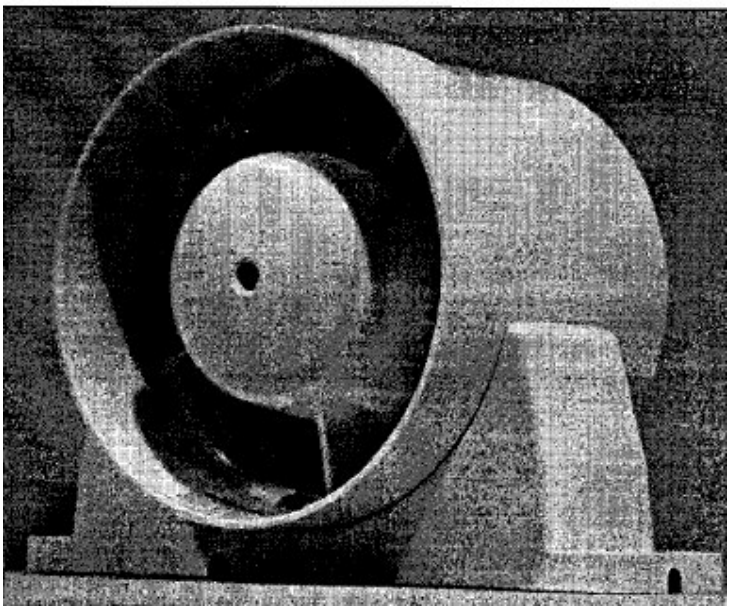
125 VKOk 12 turbo motor

125 VKOk 12 turbo front, inside

Pictures of the appliances



100 VKO L



100 VKOk L

Attachment 1

IEC/EN 60335-1/A2			
Clause	Requirement + Test	Result - Remark	Verdict
5	GENERAL CONDITIONS FOR THE TESTS		
	Tests performed according to cl. 5, e.g. nature of supply, sequence of testing, etc. The test of 19.14 is carried out before the tests of 19.11.		P
7	MARKING AND INSTRUCTIONS		
7.5	The power input is related to the arithmetic mean value of the rated voltage range		P
7.6	Correct symbols used		N/A
7.12	Instructions for safe use provided		P
	The instructions state that:		
	- the appliance is not to be used by children or persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction		P
8	PROTECTION AGAINST ACCESS TO LIVE PARTS		
8.1.1	“Without appreciable force” is considered to be a force not exceeding 1N (Note 2)		P
8.1.2	“Without appreciable force” is considered to be a force not exceeding 1N (Note 2)		P
8.1.3	“Without appreciable force” is considered to be a force not exceeding 1N (Note1)		N/A
8.1.4	- for peak values over 15kV, the energy in the discharge not exceeding 350 mJ		N/A
8.2	Note 1 does not apply		P
	Note: Built-in appliances and fixed appliances are tested after installation.		P
10	POWER INPUT AND CURRENT		
10.1	The permissible deviations apply for both limits of the range for appliances marked with a **rated voltage range** having limits differing by more than 10 % of the arithmetic mean value of the range.		N/A
	Note 1 and 2 do not apply		P
10.2	The permissible deviations apply for both limits of the range for appliances marked with a **rated voltage range** having limits differing by more than 10 % of the arithmetic mean value of the range.		N/A
	Test for an appliance with one or more rated voltage ranges		N/A

Attachment 1

IEC/EN 60335-1/A2			
Clause	Requirement + Test	Result - Remark	Verdict
11	HEATING		
	Table 3: First entry: Replace the terms “class A, class E, class B, class F and class H” by the terms “class 105, class 120, class 130, class 155 and class 180”		P
	Table 3: Fifth entry: Rubber, polychloroprene or polyvinyl chloride insulation of internal and external wiring, including supply cords: without temperature rating or with a temperature rating not exceeding 75 °C with temperature rating (T) where T exceeds 75 °C		P
	Footnote: The temperature rise limit of windings in transformers and inductors mounted on printed circuit boards is equal to the thermal class of the winding insulation reduced by 25 K provided the largest dimension of the winding does not exceed 5 mm in cross section or length.		N/A
	j: IEC 60245 Types 53, 57 and 87 supply cords have a T rating of 60 °C; IEC 60227 Types 52 and 53 supply cords have a T rating of 70 °C; IEC 60227 Types 56 and 57 supply cords have a T rating of 90 °C.		N/A
14	TRANSIENT OVERVOLTAGES		
	The impulse test voltage has a no-load wave shape corresponding to the 1,2/50 µs standard impulse specified in IEC 61180-1. It is supplied from a generator having conventional impedance not exceeding 42 Ω. The impulse test voltage is applied three times for each polarity with intervals of at least 1 s.		N/A

Attachment 1

IEC/EN 60335-1/A2			
Clause	Requirement + Test	Result - Remark	Verdict
16	LEAKAGE CURRENT AND ELECTRIC STRENGTH		
16.3	Electric strength tests according to table 7 (accordance with IEC 61180-1)	(see appended table)	P
	Note 2: The characteristics of the high-voltage source used for the test are described in Table 5.		P
	Delete the penultimate paragraph of the test specification.		P
19	ABNORMAL OPERATION		
19.1	Appliances incorporating contactors or relays subjected to the test of 19.14.		N/A
19.7	In the second paragraph, replace “IEC 60252” by “IEC 60252-1”.		N/A
19.11	Replace the second and third paragraphs by the following: Appliances incorporating an electronic circuit are subjected to the tests of 19.11.3 and 19.11.4.		N/A
	Appliances incorporating an electronic circuit that relies upon a programmable component to function correctly, subjected to the test of 19.11.4.8		N/A
	In the existing third paragraph, replace “switch” by “device” in two places.		P
	In the sixth paragraph replace “all three” by “both” and delete the last dashed item.		N/A
19.11.2	g) failure of an electronic power switching device in a partial turn-on mode with loss of gate (base) control. During this test, winding temperatures shall not exceed the values given in 19.7.		N/A
19.11.4	In the first paragraph, replace “switch” by “device” in three places.		N/A

Attachment 1

IEC/EN 60335-1/A2			
Clause	Requirement + Test	Result - Remark	Verdict
	In the last paragraph, replace "arresters" by "protective devices“.		N/A
19.11.4.6	The appliance is subjected to the Class 3 voltage dips and interruptions in accordance with IEC 61000-4-11		N/A
19.11.4.8	The appliance is supplied at rated voltage and operated under normal operation. After 60s the power supply is reduced to a level such that the appliance ceases to respond or a programmable component cease to operate.		N/A
	The appliance continues to operate normally or requires a manual operation to restart		N/A
19.13	After the tests, and when the appliance has cooled to approximately room temperature, compliance with Clause 8 shall not be impaired and the appliance shall comply with 20.2 if it can still be operated.		P
	After operation or interruption of a control, clearances and creepage distances across the functional insulation withstanding the electric strength test of 16.3. the test voltage being twice the working voltage		P
	Appliances tested with an electronic switch in the off position, or in the stand-by mode:		
	- do not become operational, or		N/A
	- if they become operational, do not result in a dangerous malfunction during or after the tests of 19.11.4		N/A
	Note: Unintended operation that may impair safety can result from careless use of appliances, such as:		
	- storage of small appliances while connected to the supply;		N/A
	– placing flammable material on working surfaces of heating appliances; or		N/A
	– placing objects in areas near motorized appliances that are not expected to start.		N/A
19.14	Appliances operated under the conditions of Clause 11. Contactors or relays contacts operating under the conditions of clause 11 short-circuited		N/A

Attachment 1

IEC/EN 60335-1/A2			
Clause	Requirement + Test	Result - Remark	Verdict
22	CONSTRUCTION		
22.2	Singe-pole switches and single-pole protective devices for the disconnection of heating elements in single-phase, permanently connected class 0I and class I appliances, connected to the phase conductor		N/A
22.5	No risk of electric shock from charged capacitors having a rated capacitance exceeding 0,1 µF when touching the pins of the plug, the appliance being disconnected from the supply at the instant of voltage peak		N/A
	Delete the note		N/A
22.21	This requirement does not apply to magnesium oxide and mineral ceramic fibres used for the electrical insulation of heating elements.		N/A
	Delete note 2		N/A
22.32	Insulating material in which heating conductors are embedded is considered to be **basic insulation** and not **reinforced insulation**.		N/A
	Delete Note 1 and renumber existing Note 2 as Note		N/A
22.35	Instead of first paragraph: actuated in normal use shall not become live in the event of a failure of **basic insulation**. If these handles, levers and knobs are of metal and if their shafts or fixings are likely to become live in the event of a failure of **basic insulation**, they shall be adequately covered by insulating material or their **accessible parts** shall be separated from their shafts or fixings by **supplementary insulation.**		N/A
22.40	Unless the appliance can operate continuously, automatically or remotely without giving rise to a hazard, appliances for remote operation being fitted with a switch. The actuating member of the switch being easily visible and accessible.		N/A
22.44	Appliances shall not have an enclosure that is shaped or decorated like a toy		P
22.49	For remote operation, the duration of operation shall be set before the appliance can be started, unless the appliance switches off automatically or can operate continuously without hazard		N/A
22.50	Controls incorporated in the appliance take priority over controls actuated by remote operation.		N/A

Attachment 1

IEC/EN 60335-1/A2			
Clause	Requirement + Test	Result - Remark	Verdict
22.51	A control on the appliance shall be manually adjusted to the setting for remote operation before the appliance can be operated in this mode. There shall be a visual indication on the appliance showing that the appliance is adjusted for remote operation. The manual setting and the visual indication of the remote mode are not necessary on appliances that can - operate continuously, or - operate automatically, or - be operated remotely, without giving rise to a hazard.		N/A
22.52	Socket-outlets on appliances accessible to the user in accordance with the socket-outlet system used in the country in which the appliance is sold.		N/A

Attachment 1

IEC/EN 60335-1/A2			
Clause	Requirement + Test	Result - Remark	Verdict
24	COMPONENTS		
24.1	NOTE 1: Compliance with the IEC standard for the relevant component does not necessarily ensure compliance with the requirements of this standard.		P
	NOTE 2: Motors are not required to comply with IEC 60034-1.		P
	NOTE 3: Unless otherwise specified, the requirements of Clause 29 of this standard apply between live parts of components and accessible parts of the appliance.		P
	NOTE 4: Unless otherwise specified, the requirements of 30.2 of this standard apply to parts of non-metallic material in components including parts of non-metallic material supporting current-carrying connections inside components.	Approved components used	P
	Components that have been previously tested and shown to comply with the resistance to fire requirements in the IEC standard for the relevant component need not be retested provided that – the severity specified in the component standard is not less than the severity specified in 30.2 of this standard and – unless the preselection alternative is used, the test report for the component states whether it complied IEC standard for the relevant component with or without flame. Flames existing for a cumulative time not exceeding 2 s during the test are ignored.		P

Attachment 1

IEC/EN 60335-1/A2			
Clause	Requirement + Test	Result - Remark	Verdict
	If the above two conditions are not satisfied, the component is tested as part of the appliance.		N/A
	There are two levels of severity specified for appliances for which 30.2.3 is applicable.		N/A
	Components that have not been previously tested and shown to comply with the IEC standard for the relevant component are tested according to the requirements of 30.2 of this standard.		N/A
	In the first paragraph of the test specification, replace “24.1.1 to 24.1.6” by “24.1.1 to 24.1.9”.		P
	Renumber Note 2 as Note 5.		P
	Lampholders and starterholders not being tested and found to comply with the relevant IEC standard, tested as a part of the appliance and additionally according to the gauging and interchangeability requirements of the relevant IEC standard.		N/A
	NOTE 6: Where the relevant IEC standard specifies these gauging and interchangeability requirements at elevated temperatures, the temperatures measured during the tests of Clause 11 are used.		N/A
24.1.7	If the remote operation of the appliance is via a telecommunication network, the relevant standard for the telecommunication interface circuitry in the appliance is IEC 62151.		N/A
24.1.8	The relevant standard for thermal links is IEC 60691. Thermal links not complying with IEC 60691 are considered to be an intentionally weak part for the purposes of Clause 19		P
24.1.9	Relays, other than motor starting relays, are tested as part of the appliance. However, they are also tested in accordance with Clause 17 of IEC 60730-1 under the maximum load conditions occurring in the appliance for at least the number of operations in 24.1.4 selected according to the relay function in the appliance.		N/A
25	SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CORDS		
25.7	Supply cords being one of the following types:		
	- rubber sheathed (at least 60245 IEC 53)		N/A

Attachment 1

IEC/EN 60335-1/A2			
Clause	Requirement + Test	Result - Remark	Verdict
	- polychloroprene sheathed (at least 60245 IEC 57)		N/A
	- cross-linked polyvinyl chloride sheathed (at least 60245 IEC 87)		N/A
	Polyvinyl chloride sheathed: Not used if they are likely to touch metal parts having a temperature rise exceeding 75K during the test of Clause 11.		N/A
	- light polyvinyl chloride sheathed cord (at least 60227 IEC 52), appliances not exceeding 3 kg		N/A
	- ordinary polyvinyl chloride sheathed cord (at least 60227 IEC 53), other appliances		N/A
	Heat resistant polyvinyl chloride sheathed: Not used for type X attachment other than specially prepared cords.		N/A
	- Heat-resistant light polyvinyl chloride sheathed cord (at least 60227 IEC 56), appliances not exceeding 3 kg		N/A
	- heat-resistant polyvinyl chloride sheathed cord (60227 IEC 57), other appliances		N/A
26	TERMINALS FOR EXTERNAL CONDUCTORS		
26.2	NOTE: Conductors connected by soldering are not considered to be positioned or fixed so that reliance is not placed upon the soldering alone to maintain it in position unless they are held in place near the terminals independently of the solder.		N/A
	In Table 13, replace the last two rows by the following: >32 and ≤50 6 and 10 6 to 16 >50 and ≤63 10 and 16 10 to 25		N/A
26.3	Compliance checked by inspection and by the test of subclause 9.6 of IEC 60999-1.		P
26.11	Replace Notes 1 and 2 by the following: NOTE: Conductors connected by soldering are not considered to be positioned or fixed so that reliance is not placed upon the soldering alone to maintain it in position unless they are held in place near the terminals independently of the solder.		N/A

Attachment 1

IEC/EN 60335-1/A2			
Clause	Requirement + Test	Result - Remark	Verdict
27	PROVISION FOR EARTHING		
27.6	The printed conductors of printed circuit boards shall not be used to provide earthing continuity in hand-held appliances. They may be used to provide earthing continuity in other appliances if at least two tracks are used with independent soldering points and the appliance complies with 27.5 for each circuit		N/A
28	SCREWS AND CONNECTIONS		
	Replace the penultimate row of Table 14 by the following: >4,7 and ≤ 5,3 0,8 2,0 1,0		N/A
28.3	Thread-cutting (self-tapping) screws and thread rolling screws shall only be used for electrical connections if they generate a full form standard machine screw thread. However, thread-cutting (self-tapping) screws shall not be used if they are likely to be operated by the user or installer.		N/A
	Thread-cutting, thread rolling and space-threaded screws may be used in connections providing earthing continuity provided it is not necessary to disturb the connection – in normal use, – during user maintenance, – when replacing a supply cord having a type X attachment, or – during installation.		N/A
	At least two screws must be used for each connection providing earthing continuity unless the screw forms a thread having a length of at least half the diameter of the screw.		N/A
29	CLEARANCES, CREEPAGE DISTANCES AND SOLID INSULATION		
	If coatings are used on printed circuit boards to protect the microenvironment (Type 1 coating) or to provide basic insulation (Type 2 coating), Annex J applies. The microenvironment is pollution degree 1 under Type 1 coating. There are no clearance or creepage distance requirements under Type 2 coating.		N/A
29.1	In Note 2, replace “suppression” by “protective”.		N/A

Attachment 1

IEC/EN 60335-1/A2			
Clause	Requirement + Test	Result - Remark	Verdict
	NOTE 6: For appliances intended for use at altitudes exceeding 2 000 m, the altitude correction factors for clearances specified in Table A.2 of IEC 60664-1 should be taken into account.		N/A
29.1.1	The values of Table 16, or the impulse voltage test of Clause 14, are applicable.		N/A
29.2	NOTE 1 The working voltage for parts connected to the neutral is the same as for parts connected to the phase and this is the working voltage for basic insulation. Add the following new note:		N/A
	NOTE 6 In a double insulation system, the working voltage for both the basic insulation and supplementary insulation is taken as the working voltage across the complete double insulation system. It is not divided according to thickness and dielectric constant of the basic insulation and supplementary insulation.		P
30	RESISTANCE TO HEAT AND FIRE		
30.2	Parts of non-metallic material adequately resistant to ignition and spread of fire.		P
	This requirement does not apply to decorative trims, knobs and other parts unlikely to be ignited or to propagate flames that originate inside the appliance.		N/A
	Compliance checked by the test of 30.2.1. In addition: - attended appliances, 30.2.2 applies - unattended appliances, 30.2.3 applies		P
	Appliances for remote operation, 30.2.3 applies.		N/A
	Base material of printed circuit board, 30.2.4 applies.		N/A
	The tests are carried out on parts of non-metallic material that have been removed from the appliance. When the glow-wire test is carried out, the parts are placed in the same orientation, as they would be in normal use.		P

Attachment 1

IEC/EN 60335-1/A2			
Clause	Requirement + Test	Result - Remark	Verdict
30.2.1	Glow-wire test of IEC 60695-2-11 at 550 °C, unless the material is classified at least HB40 according to IEC 60695-11-10		P
	Parts for which the glow-wire test cannot be carried out meet the requirements in ISO9772 for category HBF material		N/A
30.2.2	Appliances operated while attended, parts of non-metallic material supporting current-carrying connections, and parts of non-metallic material within a distance of 3mm of such connections, are subjected to the glow-wire test of IEC 60695-2-11.		N/A
	The glow-wire test is not carried out on parts of material classified as having a glow-wire flammability index according to IEC 60695-2-12 of at least:		N/A
	-750 °C, for connections carrying a current exceeding 0,5 A during normal operation		N/A
	-650 °C, for other connections		N/A
	Test as specified for an interposed shielding material		N/A
	When the glow-wire test of IEC 60695-2-11 is carried out, the temperatures are:		N/A
	-750 °C, for connections carrying a current exceeding 0,5 A during normal operation		N/A
	-650 °C, for other connections		N/A
	Test not applicable to conditions as specified		N/A
30.2.3	Appliances operated while unattended, tested as specified in 30.2.3.1 and 30.2.3.2		P
	Tests not applicable to conditions as specified		N/A

Attachment 1

IEC/EN 60335-1/A2			
Clause	Requirement + Test	Result - Remark	Verdict
30.2.3.1	Parts of non-metallic material supporting connections that carry a current exceeding 0,2 A during normal operation, and parts of non-metallic material within a distance of 3 mm of such connections, are subjected to the glow-wire test of IEC 60695-2-11 with a test severity of 850 °C. However, the glow-wire test is not carried out on parts of material classified as having a glow-wire flammability index of at least 850 °C according to IEC 60695-2-12. If the glow-wire flammability index is not available for a sample with a thickness within ± 0,1 mm of the relevant part, then the test sample shall have a thickness equal to the nearest preferred value specified in IEC 60695-2-12 that is no thicker than the relevant part.		P
	NOTE 1 The preferred values in IEC 60695-2-12 are 0,75 mm ± 0,1 mm, 1,5 mm ± 0,1 mm and 3,0 mm ± 0,2 mm.		P
	NOTE 2 Contacts in components such as switch contacts are considered to be connections.		P
	NOTE 3 The tip of the glow-wire is applied to the part in the vicinity of the connection.		P
	The glow-wire test is also not carried out on small parts that comply with the needle-flame test of Annex E or on small parts of material classified as V-0 or V-1 according to IEC 60695-11-10 provided that the test sample used for the classification was no thicker than the relevant part of the appliance.		N/A
	NOTE 4 Small parts are as defined in IEC 60695-4.		N/A
	Where a non-metallic material is within 3 mm of a current carrying connection, but is shielded from the connection by a different material, the glow-wire test of IEC 60695-2-11 is carried out at the relevant temperature with the tip of the glow-wire applied to the interposed shielding material with the shielded material in place and not directly to the shielded material.		N/A

Attachment 1

IEC/EN 60335-1/A2			
Clause	Requirement + Test	Result - Remark	Verdict
30.2.3.2	Parts of non-metallic material supporting current-carrying connections, and parts of non-metallic material within a distance of 3 mm of such connections, are subjected to the glow-wire test of IEC 60695-2-11. However, the glow-wire test is not carried out on parts of material classified as having a glow-wire ignition temperature according to IEC 60695-2-13 of at least – 775 °C, for connections that carry a current exceeding 0,2 A during normal operation, – 675 °C, for other connections.		N/A
	If the glow-wire ignition temperature is not available for a sample with a thickness within ± 0,1 mm of the relevant part, then the test sample shall have a thickness equal to the nearest preferred value specified in IEC 60695-2-13 that is no thicker than the relevant part.		N/A
	NOTE 1 The preferred values in IEC 60695-2-13 are 0,75 mm ± 0,1 mm, 1,5 mm ± 0,1 mm and 3,0 mm ± 0,2 mm.		N/A
	Where an non-metallic material is within 3 mm of a current carrying connection, but is shielded from the connection by a different material, the glow-wire test of IEC 60695-2-11 is carried out at the relevant temperature with the tip of the glow-wire applied to the interposed shielding material with the shielded material in place and not directly to the shielded material.		N/A
	When the glow-wire test of IEC 60695-2-11 is carried out, the temperatures are – 750 °C, for connections that carry a current exceeding 0,2 A during normal operation, – 650 °C, for other connections.		P
	NOTE 2 Contacts in components such as switch contacts are considered to be connections.		P
	NOTE 3 The tip of the glow-wire is applied to the part in the vicinity of the connection.		P

Attachment 1

IEC/EN 60335-1/A2			
Clause	Requirement + Test	Result - Remark	Verdict
	If parts that withstand the glow-wire test of IEC 60695-2-11, but during the test produce a flame that persists for longer than 2 s, then these parts and adjacent parts are further tested as follows. Parts above the connection within the envelope of a vertical cylinder having a diameter of 20 mm and a height of 50 mm are subjected to the needle-flame test of Annex E. However, parts shielded by a flame barrier that meets the needle-flame test of Annex E are not tested.		N/A
	The needle-flame test is not carried out on parts of material classified as V-0 or V-1 according to IEC 60695-11-10 provided that the test sample used for the classification was no thicker than the relevant part of the appliance.		N/A
30.2.4	Base material of printed circuit boards subjected to needle-flame test of annex E		N/A
	Test is not applicable to conditions as specified		N/A
32	RADIATION, TOXICITY AND SIMILAR HAZARDS		
	Appliance shall not emit harmful radiation, present a toxic or similar hazard due to their operation in normal use		P
	Compliance is checked by the limits or tests specified in Part 2. However, if no limits or tests are specified in Part 2, then the appliance is deemed to comply with the requirement without testing.		P
D	ANNEX D (NORMATIVE) THERMAL MOTOR PROTECTORS		
	Delete the note		P
E	ANNEX E (NORMATIVE) NEEDLE-FLAME TEST		
	Needle-flame test carried out in accordance with IEC 60695-11-5, with the following modifications:		N/A
7	Severities		
	The duration of application of the test flame is 30 s ± 1 s		N/A

Attachment 1

IEC/EN 60335-1/A2			
Clause	Requirement + Test	Result - Remark	Verdict
9	Test procedure		
9.1	The specimen so arranged that the flame can be applied to a vertical or horizontal edge as shown in the examples of figure 1		N/A
9.2	The first paragraph does not apply		N/A
	If possible, the flame is applied at least 10 mm from a corner		N/A
9.3	The test is carried out on one specimen		N/A
	If the specimen does not withstand the test, the test may be repeated on two additional specimens, both withstanding the test		N/A
11	Evaluation of test results		
	The duration of burning not exceeding 30 s		N/A
	However, for printed circuit boards, the duration of burning not exceeding 15 s		N/A
J	ANNEX J (NORMATIVE) COATED PRINTED CIRCUIT BOARDS		
	Testing of protective coatings of printed circuit boards carried out in accordance with IEC 60664-3 with the following modifications:		N/A
5.7	Conditioning of the test specimens		
	When production samples are used, three samples of the printed circuit board are tested		N/A
5.7.1	Cold		
	The test is carried out at -25°C		N/A
5.7.3	Rapid change of temperature		
	Severity 1 is specified		N/A
5.9	Additional tests		
	This subclause is not applicable		N/A
Q	ANNEX Q (INFORMATIVE) SEQUENCE OF TESTS FOR THE EVALUATION OF ELECTRONIC CIRCUITS		
	Replace "19.10 " by " 19.10 and 19.14" in two places.		N/A

Attachment 1

EN 60335-1/A12			
Clause	Requirement + Test	Result - Remark	Verdict
29	CLEARANCE, CREEPAGE DISTANCES AND SOLID INSULATION		
29.3	Replace the third dashed item by: Assessment of thermal quality of the material combined with an electric strength test.		N/A
29.3.Z1	If accessible reinforced insulation consist of a single layer, the thickness of this layer comply with Table Z1		P

EN 60335-1/A13			
Clause	Requirement-Test	Result – Remark	Verdict
24	COMPONENTS		
24.1.7	Remote operation is via telecommunication network. (Telecommunication interface circuity: EN 41003 and EN 60950-1:2006, subclause 6.3)		N/A

Mérőeszköz Measuring equipment	Gyártó Manufacturer	Típus Type	Leltári sz. / széria sz. Inventory / Serial No.	Köv. kalibráció Next calibration
Dielectric strength tester	Kikusui	TOS 5050	211/23246/2005	2009.06.
Ohm meter	Ganz	DKE	2110/045	2009.09.
Leakage current measurer	HIOKI	3156	2110/718	2010.06.
Wattmeter	Norma	D1150	211/570632/xx1/2005	2009.08.
Hybrid recorder	Yokogawa	DR130	2112/637	2010.08.
EMF tester	Narda	2304/03	53298	2011.03.17.
EMF tester Magnetic Field Probe	Narda	2300/90.10	53299	2011.03.17.

Megjegyzés / *Remark*: –